

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Dwy-Va Deo Examiner #: 95770 Date: 3/28/06
 Art Unit: 1765 Phone Number: 800 21462 Serial Number: 10/715246
 Mail Box and Bldg/Room Location: 8665 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Chemical Mechanical Pad
 Inventors (please provide full names): Thomas H. Baum

Earliest Priority Filing Date: 11/17/03

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for claims 1, 14 and 15

the difference between claim 1 & 14 is
claim 1 cites a pad while claim 14 cites
material

Please see attached page for the
B-diketones description.

SCIENTIFIC REFERENCE BR
 Sci & Tech Inf. Ctr

MAR 21 2006

Pat. & T.M. Office

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>USA</u>	NA Sequence (#) _____	STN <u>*568.90</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>1</u>	Questel/Orbit _____
Date Searcher Picked Up: <u>3/28/06</u>	Bibliographic _____	Dr.Link _____
Date Completed: <u>3/29/06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>60</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>30</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>120</u>	Other _____	Other (specify) _____



STIC Search Report

EIC 1700

STIC Database Tracking Number: 183449

**TO: Duy-Vu Deo
Location: REM 8B65
Art Unit : 1765
March 29, 2006**

Case Serial Number: 10/715246

**From: Usha Shrestha
Location: EIC 1700
REMSSEN 4B28
Phone: 571/272-3519
usha.shrestha@uspto.gov**

Search Notes



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
- Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

- Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention

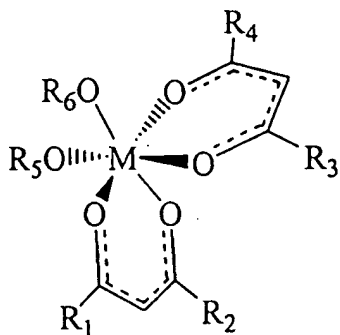
Comments:

In the Claims

1. (Currently amended) A hydrophobic Chemical mechanical planarization (HCMP) pad comprising:
an organic polymer; and
a metal agent, wherein the metal agent includes a metal B-diketonate.
2. (Currently amended) The HCMP pad of claim 1 wherein said organic polymer is one of ~~polyurethane~~, a polyurethane, or a polyether based material.
3. (Previously presented) The HCMP pad of claim 1 wherein said organic polymer is formed of a polyol and di-isocyanate.
4. (Currently amended) The HCMP pad of claim 1 wherein said organic polymer is reactive with one of a polyfunctional amine, a diamine, a triamine, a polyfunctional hydroxyl, and a ~~mixed~~-mixed functionality hydroxylamine.
5. (Previously presented) The HCMP pad of claim 1 further comprising a matrix material selected from a group consisting of a melamine, a polyester, a polysulfone, polyvinyl acetate, and a fluorinated hydrocarbon.
6. (Cancelled)
7. (Currently amended) The HCMP pad of claim ~~6~~ 1 wherein the metal B-diketonate includes one of cobalt, palladium, nickel, zinc, titanium, zirconium, hafnium, and copper.
8. (Currently amended) The HCMP pad of claim ~~6~~ 1 wherein the metal B-diketonate includes a side group selected from hydrogen, an aryl, a perfluoraryl, an alkyl, a perfluoroalkyl, and a t-butyl group.
9. (Currently amended) The HCMP pad of claim 1 for planarization of a semiconductor ~~wager wafer~~, the planarization of a semiconductor wafer, the planarization to isolate a metal feature in the semiconductor wafer.
10. (Previously presented) The HCMP pad of claim 9 wherein said metal agent includes a metal compatible with a metal of the metal feature.

11. (Previously presented) The HCMP pad of claim 9 to substantially retain a planarization characteristic during the planarization.
12. (Currently amended) The HCMP pad of claim 11 wherein the planarization characteristic is one of shearing, hardness, wearing, cross-linking, water uptake and electrical character.
13. (Previously presented) The HCMP pad of claim 9 to avoid substantial uptake of aqueous slurry during the planarization.
14. (Currently amended) A chemical mechanical planarization (CMP) material for forming a hydrophobic CMP (HCMP) pad consisting essentially of and comprising:
 - a liquid urethane; and
 - a metal agent.
15. (Currently amended) The CMP material of claim 14 wherein the metal agent is metal agent is a B-diketonate selected to effect cross-linking reactions during the forming.
16. (Currently amended) The CMP material of claim 14 wherein the metal agent is selected to increase thermal stability or effect cross-linking reaction during the forming.
17. (Currently amended) The CMP material of claim 14 wherein the ~~metal agent is a~~ B-diketonate has a side group selected from the group consisting of t-butyl and perfluoroalkyl side group having one of t-butyl and perfluoroalkyl side groups.
18. (Withdrawn) A method comprising mixing an organic polymer and a metal agent to form a chemical mechanical planarization (CMP) material, wherein the metal agent is a B-diketonate.
19. (Withdrawn) The method of claim 18 further comprising:
 - adding a foaming agent and a curing agent to the CMP material;
 - reducing pressure around the CMP material; and
 - heating the CMP material.

20. (Withdrawn) The method of claim 19 further comprising sawing a hydrophobic CMP pad from a log formed of the CMP material.
21. (Withdrawn) A method comprising:
providing a hydrophobic chemical mechanical planarization (HCMP) pad according to claim 1; and
planarizing a semiconductor wafer with the HCMP pad.
22. (Withdrawn) The method of claim 21 wherein the planarizing further comprises:
delivering an aqueous slurry to a surface of the HCMP pad;
moving the HCMP pad in a first direction; and
moving the semiconductor wafer in a second direction different from the first direction.
23. (New) A method of forming a chemical mechanical planarization (CMP) material:
comprising: mixing components to form the CMP material wherein the CMP mixture consists essentially of an organic polymer and a metal agent.
24. (New) The method of claim 23 further comprising:
adding a foaming agent and a curing agent to the CMP material;
reducing pressure around the CMP material; and
heating the CMP material.
25. (New) The method of claim 24 further comprising sawing a hydrophobic CMP pad from a log formed of the CMP material.
26. (New) A method comprising:
providing a hydrophobic chemical mechanical planarization (HCMP) pad according to claim 14; and
planarizing a semiconductor wafer with the HCMP pad.
27. (NEW) The HCMP pad of claim 1 wherein said organic polymer is a urethane.



structure of metal β -diketonate

[0021] As shown above, M may be a divalent metal cation including Copper, Cobalt, Palladium, Nickel, and Zinc, or a tetravalent metal cation including Titanium, Zirconium, and Hafnium. Additionally, R₁, R₂, R₃, R₄, R₅ and R₆ may be any combination of Hydrogen, aryls, perfluoroaryls, alkyls, and perfluoroalkyls. However, other embodiments may also be employed, including derivatives of metal β -diketonates and Lewis base adducts. In one preferred embodiment, all of R₁ - R₆ are t-butyl groups. These groups may be chosen to help limit isomerization reactions and instill a higher thermal stability to the organic polymer matrix formed. In another embodiment, all of R₁ - R₆ are perfluoroalkyl groups.

[0022] Referring now to Figs. 1, 2 and 6, the CMP material 100 is cured as described above and a solidified CMP log 200 is removed as indicated at 650, from the mold container 175 and chamber 101. A CMP saw 275 is used to saw individual hydrophobic CMP pads 250 from the CMP log 200. In this manner, a single CMP log 200 provides several hydrophobic CMP pads 250 as indicated at 660. A hydrophobic CMP pad 250 may then be treated, conditioned, and available for use in planarization (see Figs. 3-5).

[0023] Referring to Figs. 3-5, a hydrophobic CMP pad 250 is shown employed in a planarization process applied to a semiconductor wafer 300 Fig. 7, a flow-chart

=> fil reg

FILE 'REGISTRY' ENTERED AT 09:51:38 ON 29 MAR 2006

=> d his ful

FILE 'REGISTRY' ENTERED AT 07:54:47 ON 29 MAR 2006

ACT DEO246/Q

STR

L1

L2 50 SEA SSS SAM L1

L3 72037 SEA ABB=ON PLU=ON PUR/PCT

L4 269459 SEA ABB=ON PLU=ON PETH/PCT

L5 7227 SEA SSS FUL L1

SAV L5 DEO246A/A

FILE 'HCAPLUS' ENTERED AT 08:30:12 ON 29 MAR 2006

L6 42159 SEA ABB=ON PLU=ON L3

L7 434616 SEA ABB=ON PLU=ON L4

L8 5300 SEA ABB=ON PLU=ON L5

L9 262 SEA ABB=ON PLU=ON (L6 OR L7) AND L8

L10 32 SEA ABB=ON PLU=ON L9 AND ELECTRIC?/SC,SX

L11 1 SEA ABB=ON PLU=ON US20050106880/PN

D ABS

L12 2 SEA ABB=ON PLU=ON L9 AND (CMP OR HCMP OR CHEMICAL(2A) PLANARI? OR PLANARI?)

L13 17 SEA ABB=ON PLU=ON L8 AND (CMP OR HCMP OR CHEM?(2A) PLANARI? OR PLANARI?)

L14 6 SEA ABB=ON PLU=ON L13 AND POLYMER?

L15 6 SEA ABB=ON PLU=ON L12 OR L14

L16 0 SEA ABB=ON PLU=ON L13 AND ?URETHAN?

L17 86 SEA ABB=ON PLU=ON L8 AND ?URETHAN?

L18 0 SEA ABB=ON PLU=ON L17 AND (CMP OR HCMP OR CHEM?(2A) PLANARI? OR PLANARI?)

L19 17 SEA ABB=ON PLU=ON L13 OR L15 OR L16 OR L18

L20 0 SEA ABB=ON PLU=ON L10 AND POLISH?

L21 3 SEA ABB=ON PLU=ON L9 AND POLISH?

L22 19 SEA ABB=ON PLU=ON (L19 OR L20 OR L21)

L23 638 SEA ABB=ON PLU=ON L8 AND POLYMER?/IT

L24 4 SEA ABB=ON PLU=ON L23 AND POLISH?

L25 1 SEA ABB=ON PLU=ON L24 AND ELECTRIC?/SC,SX

L26 20 SEA ABB=ON PLU=ON L22 OR L25

L27 25527 SEA ABB=ON PLU=ON (CMP OR HCMP OR CHEM?(2A) PLANARI? OR PLANARI?)

L28 1191 SEA ABB=ON PLU=ON L27 AND POLYMER?/IT

L29 259 SEA ABB=ON PLU=ON L28 AND METAL?

L30 119 SEA ABB=ON PLU=ON L29 AND ELECTRIC?/SC

L31 58 SEA ABB=ON PLU=ON L30 AND (CIRCUIT? OR WAFER? OR DISC# OR DISK?)

L32 33 SEA ABB=ON PLU=ON L31 AND (PAD? OR MATERIAL?)

L33 0 SEA ABB=ON PLU=ON L32 AND L8

L34 3 SEA ABB=ON PLU=ON L28 AND L8

L35 20 SEA ABB=ON PLU=ON L26 OR L33 OR L34

L36 33 SEA ABB=ON PLU=ON L32 NOT L35

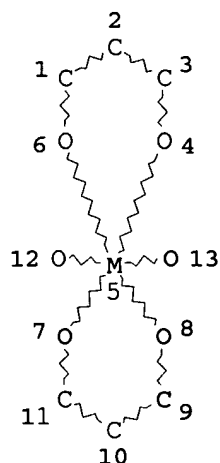
L37 1 SEA ABB=ON PLU=ON L17 AND POLISH?

L38 0 SEA ABB=ON PLU=ON L37 AND ELECTRIC?/SC,SX

L39 20 SEA ABB=ON PLU=ON L35 OR L38

=> d que 139

L1 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE

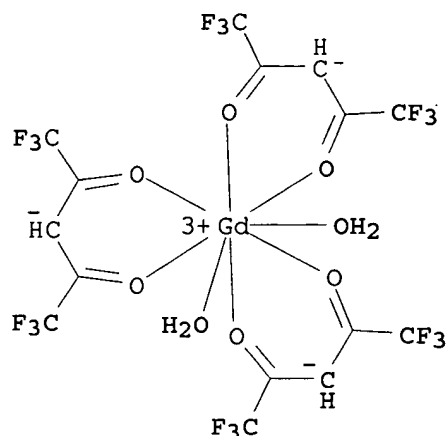
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L5	7227	SEA FILE=REGISTRY	SSS FUL	L1	
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L8	5300	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L5
L9	262	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(L6 OR L7) AND L8
L10	32	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L9 AND ELECTRIC?/SC,SX
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L14	6	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L13 AND POLYMER?
L15	6	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L12 OR L14
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L19	17	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L13 OR L15 OR L16 OR L18
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L21	3	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L9 AND POLISH?
L22	19	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(L19 OR L20 OR L21)
L23	638	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L8 AND POLYMER?/IT
L24	4	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L23 AND POLISH?
L25	1	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L24 AND ELECTRIC?/SC,SX
L26	20	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L22 OR L25
L27	25527	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(CMP OR HCMP OR CHEM? (2A) PLANARI? OR PLANARI?)
L28	1191	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L27 AND POLYMER?/IT

L29 259 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND METAL?
 L30 119 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND ELECTRIC?/SC
 L31 58 SEA FILE=HCAPLUS ABB=ON PLU=ON L30 AND (CIRCUIT? OR
 WAFER? OR DISC# OR DISK?)
 L32 33 SEA FILE=HCAPLUS ABB=ON PLU=ON L31 AND (PAD? OR
 MATERIAL?)
 L33 0 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L8
 L34 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND L8
 L35 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 OR L33 OR L34
 L37 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND POLISH?
 L38 0 SEA FILE=HCAPLUS ABB=ON PLU=ON L37 AND ELECTRIC?/SC,S
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 L39 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L35 OR L38

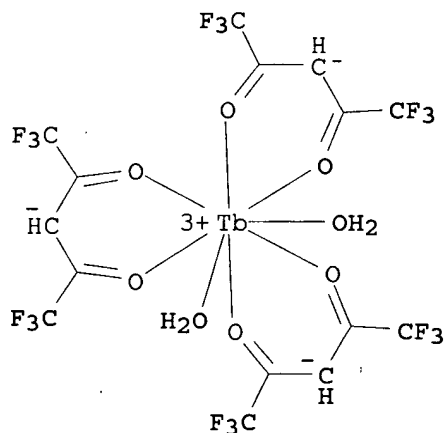
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=> d l39 1-20 ibib abs hitstr hitind

L39 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:147337 HCAPLUS
 DOCUMENT NUMBER: 142:402859
 TITLE: Synthesis, structure and magnetic properties
 of lanthanide(III) complexes with new
 imidazole-substituted imino nitroxide radical
 AUTHOR(S): Tsukuda, Toshiaki; Suzuki, Takayoshi; Kaizaki,
 Sumio
 CORPORATE SOURCE: Department of Chemistry, Graduate School of
 Science, Faculty of Science, Osaka University,
 Toyonaka, Osaka, 5600043, Japan
 SOURCE: Inorganica Chimica Acta (2005), 358(4),
 1253-1257
 CODEN: ICHAA3; ISSN: 0020-1693
 PUBLISHER: Elsevier B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Synthesis, characterization and magnetic properties of new
 lanthanide-radical complexes, [LnIII(hfac)3(IM2imH)] (Ln = Gd, Tb;
 IM2imH = 2-(4-imidazolyl)-4,5-dihydro-4,4,5,5-tetramethyl-1H-
 imidazolyl-1-oxy; hfac = hexafluoroacetylacetonate), are
 described. The mol. structure of [Tb(hfac)3(IM2imH)] was determined by
 the x-ray diffraction. The magnetic susceptibility data for
 [Gd(hfac)3(IM2imH)] show that the Gd-IM2imH magnetic interaction
 is antiferromagnetic with an exchange coupling constant $J = -2.59$
 cm⁻¹ in contrast to the ferromagnetic interaction in most Gd(III)
 complexes containing a paramagnetic center, which will be examined in
 connection with planarity of the IM2imH chelate.
 IT 20558-32-1
 (for preparation of gadolinium(III) imidazolyimidazolyloxy radical
 diketonate)
 RN 20558-32-1 HCAPLUS
 CN Gadolinium, diaquatrakis(1,1,1,5,5,5-hexafluoro-2,4-pentanedionato-
 κO,κO')- (9CI) (CA INDEX NAME)



IT 20558-31-0
 (for preparation of terbium(III) imidazolyimidazolyloxy radical
 diketonate)
 RN 20558-31-0 HCAPLUS
 CN Terbium, diaquatris(1,1,1,5,5,5-hexafluoro-2,4-pentanedionato-
 κ O, κ O')- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 75, 77
 IT 20558-32-1
 (for preparation of gadolinium(III) imidazolyimidazolyloxy radical
 diketonate)
 IT 20558-31-0
 (for preparation of terbium(III) imidazolyimidazolyloxy radical
 diketonate)
 REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L39 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:1072250 HCAPLUS
 DOCUMENT NUMBER: 142:246853

TITLE: Oxidative Dissolution of Copper and Zinc Metal
in Carbon Dioxide with tert-Butyl Peracetate
and a β -Diketone Chelating Agent

AUTHOR(S): Visintin, Pamela M.; Bessel, Carol A.; White,
Peter S.; Schauer, Cynthia K.; DeSimone,
Joseph M.

CORPORATE SOURCE: Department of Chemistry, University of North
Carolina at Chapel Hill, Chapel Hill, NC,
27599-3290, USA

SOURCE: Inorganic Chemistry (2005), 44(2), 316-324
CODEN: INOCAJ; ISSN: 0020-1669

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

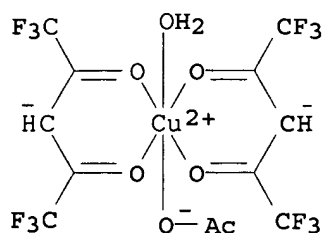
AB A series of β -diketone ligands, $R_1COCH_2COR_2$ [tmhdH ($R_1 = R_2 = C(CH_3)_3$); tfach ($R_1 = CF_3$; $R_2 = CH_3$); hfach ($R_1 = R_2 = CF_3$)], in combination with tert-Bu peracetate (t-BuPA), have been investigated as etchant solns. for dissoln. of copper metal into carbon dioxide solvent. Copper removal in CO_2 increases in the order tfach < tmhdH < hfach. A study of the reactions of the hfach/t-BuPA etchant solution with metallic copper and zinc was conducted in three solvents: sc CO_2 (supercrit. CO_2); hexanes; CD_2Cl_2 . The etchant solution/metallic zinc reaction produced a diamagnetic Zn(II) complex, which allowed NMR identification of the t-BuPA decomposition products as tert-Bu alc. and acetic acid. Gravimetric anal. of the amount of zinc consumed, together with NMR studies, confirmed the 1:1:2 Zn:t-BuPA:hfach reaction stoichiometry, showing t-BuPA to be an overall two-electron oxidant for Zn(0). The metal-containing products of the copper and zinc reactions were characterized by elemental anal., IR spectroscopy, and, as appropriate, NMR spectroscopy and single-crystal X-ray diffraction [trans-M(hfac) $_2(H_2O)(CH_3CO_2H)$ (1, M = Cu; 2, M = Zn)]. On the basis of the exptl. results, a working model of the oxidative dissoln. reaction is proposed, which delineates the key chemical variables in the etching reaction. These t-BuPA/hfach etchant solns. may find application in a CO_2 -based chemical mech. planarization (CMP) process.

IT 844639-64-1P 844639-65-2P

(crystal structure; oxidative dissoln. of copper and zinc metal in carbon dioxide with tert-Bu peracetate and β -diketone chelating agent)

RN 844639-64-1 HCAPLUS

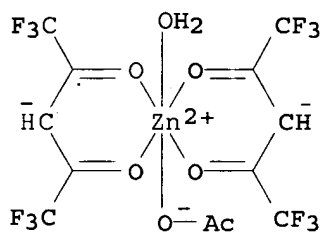
CN Cuprate(1-), (acetato- κO)aquabis(1,1,1,5,5,5-hexafluoro-2,4-pentanedionato- $\kappa O, \kappa O'$)-, hydrogen, (OC-6-11)- (9CI)
(CA INDEX NAME)



● H⁺

RN 844639-65-2 HCAPLUS

CN Zincate(1-), (acetato-κO)aquabis(1,1,1,5,5,5-hexafluoro-2,4-pentanedionato-κO,κO')-, hydrogen, (OC-6-11)- (9CI)
(CA INDEX NAME)



● H⁺

CC 67-3 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 76, 78

IT 844639-64-1P 844639-65-2P

(crystal structure; oxidative dissoln. of copper and zinc metal in carbon dioxide with tert-Bu peracetate and β-diketone chelating agent)

REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L39 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:265361 HCAPLUS

DOCUMENT NUMBER: 141:62387

TITLE: Bis(dimethyl sulfoxide-κO)bis(1-phenylbutane-1,3-dionato-κ2O,O')nickel(II)

AUTHOR(S): Mestrovic, Ernest; Halasz, Ivan; Bucar, Dejan Kresimir; Zgela, Marijana

CORPORATE SOURCE: Faculty of Science, Chemistry Department, Laboratory of General and Inorganic Chemistry, University of Zagreb, Zagreb, HR-10002, Croatia

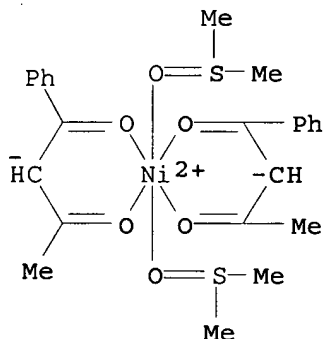
SOURCE: Acta Crystallographica, Section E: Structure Reports Online (2004), E60(4), m367-m369
 CODEN: ACSEBH; ISSN: 1600-5368
 PUBLISHER: International Union of Crystallography
 DOCUMENT TYPE: Journal; (online computer file)
 LANGUAGE: English

AB In the reaction of bis(1-phenylbutane-1,3-dionato)nickel(II) with DMSO, bis(DMSO)bis(1-phenylbutane-1,3-dionato)nickel(II) is formed, in which two DMSO mols. are coordinated to the Ni atom through their O atoms in a trans arrangement. The compound crystallizes in space group P21/a (a 7.3772(17), b 13.453(2), c 12.085(2) Å, β 92.026(18)°, Z = 2, d_c = 1.489, R = 0.035, $R_w(F^2)$ = 0.064, 3516 reflections) with the Ni atom lying on a center of inversion. The coordination polyhedron around the Ni atom is a distorted octahedron. The chelate ring deviates slightly from planarity. The Ni-O bond distance to the DMSO O atom is slightly longer than that to the 1-phenylbutane-1,3-dionate ligand. In the crystal structure, two-dimensional frameworks are formed by C-H...O interactions.

IT 709044-16-6P
 (preparation and crystal structure of)

RN 709044-16-6 HCAPLUS

CN Nickel, bis(1-phenyl-1,3-butanedionato- κ O, κ O')bis[(sulfinyl- κ O)bis[methane]]-, (OC-6-12)- (9CI) (CA INDEX NAME)



CC 75-8 (Crystallography and Liquid Crystals)
 Section cross-reference(s): 78

IT 709044-16-6P
 (preparation and crystal structure of)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L39 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:570090 HCAPLUS

DOCUMENT NUMBER: 140:225646

TITLE: Hybrid bilayer imaging approach using single component metal-organic precursors for high-resolution electron-beam lithography

AUTHOR(S): Jeyakumar, Augustin; Henderson, Clifford L.; Roman, Paul J.; Suh, Seigi

CORPORATE SOURCE: Georgia Institute of Technology, Atlanta, GA, 30332, USA

SOURCE: Proceedings of SPIE-The International Society
for Optical Engineering (2003), 5039(Pt. 1,
Advances in Resist Technology and Processing
XX), 502-512

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical
Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

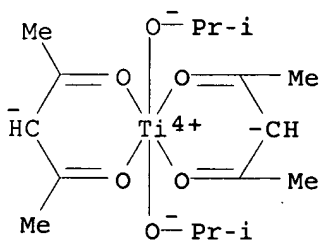
AB A hybrid bilayer imaging approach has been developed which uses a thin radiation sensitive, single component, metal-organic precursor film in conjunction with a thicker organic **planarizing** etch barrier. Upon electron-beam irradiation, the metal-organic precursors are converted to a metal-oxide etch mask and the pattern can be transferred through the organic etch barrier layer using an oxygen reactive ion etch. These novel precursors can also be converted to the metal-oxide using deep-UV optical irradiation or thermal baking. Therefore, a combination of blanket conversion steps followed by the patterning process can be utilized in order to reduce imaging doses. In this work, results of characterizing a titanium(n-butoxide)₂(2-ethylhexanoate)₂ precursor are presented due to its combined properties of hydrolytic stability and moderate sensitivity. It was found that using a blanket thermal bake step of 1, 2, and 3 min at 150° C prior to electron-beam exposure increased the sensitivity of the materials to 200, 90, and 72 μC/cm² resp. However, the contrast of the material decreased from 4.40 to 2.17 as a consequence of pre-exposure thermal baking. The etching characteristics of the metal-organic precursor were also studied in ashing and silicon dioxide etching plasmas. It was found that the etch rate in the different plasmas depends strongly on the extent of conversion of the metal-organic film. Films with higher extents of conversion to the metal-oxide provide higher etch resistance in general. The patterning capability with these metal-organic precursors is demonstrated on top of both silicon substrates and hard baked novolak films.

IT 17927-72-9 21324-45-8

(precursor; hydrolytic stability and sensitivity of titanium precursors based on acetylacetonate ligands for electron-beam lithog.)

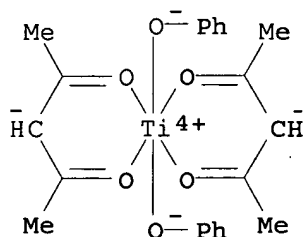
RN 17927-72-9 HCAPLUS

CN Titanium, bis(2,4-pentanedionato-κO,κO')bis(2-propanolato)- (9CI) (CA INDEX NAME)



RN 21324-45-8 HCAPLUS

CN Titanium, bis(2,4-pentanedionato-κO,κO')diphenoxy- (9CI) (CA INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 17927-72-9 21324-45-8

(precursor; hydrolytic stability and sensitivity of titanium precursors based on acetylacetonate ligands for electron-beam lithog.)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L39 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:799468 HCAPLUS

DOCUMENT NUMBER: 139:60281

TITLE: Novel bilayer resist approach using radiation sensitive organometallic precursors

AUTHOR(S): Jeyakumar, Augustin; Barstow, Sean Jeffrey; Henderson, Clifford L.

CORPORATE SOURCE: Dep. Chem. Eng., Georgia Institute of Technology, Atlanta, GA, 30332, USA

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2002), 4690(Pt. 2, Advances in Resist Technology and Processing XIX), 1034-1042

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

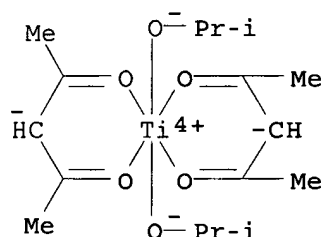
DOCUMENT TYPE: Journal

LANGUAGE: English

AB A novel neg.-tone bilayer scheme has been developed using organometallic imaging materials in conjunction with organic **planarizing** layers. Precursor films containing the radiation sensitive organometallics are spin coated and converted to a metal oxide through electron-beam exposure to form an etch mask for pattern transfer. After exposure, the unexposed regions are washed away using an appropriate developer solution and the etch mask pattern is transferred through the organic **planarizing** layer by an oxygen reactive ion etch (RIE). In this work, a multicomponent organometallic precursor Ba(Sr,Ti) including: barium 2-ethylhexanoate, strontium 2-ethylhexanoate, and titanium(IV) (diisopropoxide) (bisacetylacetonate) is evaluated as a possible imaging material for bilayer lithog. applications. The sensitivity of the 1:1:2 (molar ratio of metals) Ba(Sr,Ti) precursor was found to be 56.5 $\mu\text{C}/\text{cm}^2$ with a contrast of 16.1 at 10 keV accelerating potential. In order to enhance the sensitivity, partial conversion of the precursor to the metal oxide prior to electron-beam exposure through thermal baking was investigated. It was found that a 30 s thermal bake at 150° C enhanced the sensitivity to 23.3 $\mu\text{C}/\text{cm}^2$ but

decreased the contrast to 4.2. Also, blanket etch studies on exposed samples found that the remaining organic ligands in the precursor are further converted to the metal oxide upon exposure to the O₂ plasma causing shrinkage of the etch mask. After shrinkage, the precursor offers excellent etch selectivity as compared to hard baked novolak. This bilayer process is demonstrated by printing 200 nm line and space patterns using electron beam patterning.

- IT 17927-72-9, Titanium (diisopropoxide) (bisacetylacetonate) (precursor; lithog. characterization of electron-beam neg. resist bilayer including organometallic precursor imaging film and novolak **planarizing** layer)
- RN 17927-72-9 HCAPLUS
- CN Titanium, bis(2,4-pentanedionato-κO,κO')bis(2-propanolato)- (9CI) (CA INDEX NAME)



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST electron beam lithog resist organometallic precursor novolak **planarizing** layer; barium strontium titanium complex precursor electron beam resist
- IT Electron beam resists (neg.-working; lithog. characterization of electron-beam neg. resist bilayer including organometallic precursor imaging film and novolak **planarizing** layer)
- IT Phenolic resins, properties (novolak, **planarizing**; lithog. characterization of electron-beam neg. resist bilayer including organometallic precursor imaging film and novolak **planarizing** layer)
- IT Etching (plasma; lithog. characterization of electron-beam neg. resist bilayer including organometallic precursor imaging film and novolak **planarizing** layer)
- IT Organometallic compounds (precursor; lithog. characterization of electron-beam neg. resist bilayer including organometallic precursor imaging film and novolak **planarizing** layer)
- IT 7440-37-1, Argon, uses 7782-44-7, Oxygen, uses (plasma etch; lithog. characterization of electron-beam neg. resist bilayer including organometallic precursor imaging film and novolak **planarizing** layer)
- IT 2457-01-4, Barium di(2-ethylhexanoate) 2457-02-5, Strontium 2-ethylhexoate 17927-72-9, Titanium (diisopropoxide) (bisacetylacetonate) (precursor; lithog. characterization of electron-beam neg. resist bilayer including organometallic precursor imaging film and novolak **planarizing** layer)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE

FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L39 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:662174 HCAPLUS

DOCUMENT NUMBER: 138:178950

TITLE: Evaluation of chemical solution deposited
BaxSr1-xTiO3 thin films on LaAlO3 in tunable
microwave devices

AUTHOR(S): Van Keuls, F. W.; Mueller, C. H.; Romanofsky,
R. R.; Warner, J. D.; Miranda, F. A.;
Majumder, S. B.; Jain, M.; Martinez, A.;
Katiyar, R. S.; Jiang, H.

CORPORATE SOURCE: NASA Glenn Research Center, Cleveland, OH,
44135, USA

SOURCE: Integrated Ferroelectrics (2002), 42, 207-217
CODEN: IFEREU; ISSN: 1058-4587

PUBLISHER: Taylor & Francis Inc.

DOCUMENT TYPE: Journal

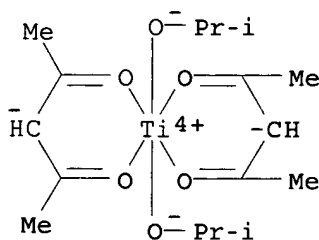
LANGUAGE: English

AB Epitaxial BaxSr1-xTiO3 (BST) films grown on LaAlO3 by several
deposition methods have been tested in coupled microstrip phase
shifters (CMPS) at frequencies from 10 to 24 GHz. To
date the best performance for the devices has been achieved using
Pulsed Laser Deposition (PLD). However, recently chemical solution
deposition (CSD) methods such as sol-gel and Metal-Organic Chemical Liquid
Deposition (MOCLD) have shown advances in fabricating BST films
for tunable microwave applications. CSD processes promise
improvements in cost, speed and area covered during BST film
deposition. This paper compares over 35 BST films used in
identical CMPS circuits. In this study, the highest
measured figures of merit of phase shift per dB of loss for PLD,
MOCLD and sol-gel CMPS are 49, 47 and 41°/dB
resp. While other phase shifter designs using BST films have
surpassed these values, this database of identical circuits allows
us to compare the BST films. X-ray diffraction characterization
for many of the BST films is also given.

IT 17927-72-9, Titanium diisopropoxy bis(acetylacetonate)
(evaluation of chemical solution deposited BaxSr1-xTiO3 thin films on
LaAlO3 in tunable microwave devices)

RN 17927-72-9 HCAPLUS

CN Titanium, bis(2,4-pentanedionato-κO,κO')bis(2-
propanolato)- (9CI) (CA INDEX NAME)



CC 76-14 (Electric Phenomena)

Section cross-reference(s): 75

IT 543-80-6, Barium acetate 543-94-2, Strontium acetate
17927-72-9, Titanium diisopropoxy bis(acetylacetonate)

(evaluation of chemical solution deposited BaxSr1-xTiO3 thin films on LaAlO3 in tunable microwave devices)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L39 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:840468 HCAPLUS

DOCUMENT NUMBER: 135:372702

TITLE: Siliconized polyimide resin compositions for
forming dielectric films with low dielectric
constant and good resistance to heat and crack

INVENTOR(S): Okada, Takashi; Matsubara, Minoru; Goto, Kohei

PATENT ASSIGNEE(S): JSR Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001316621	A2	20011116	JP 2000-138309	2000 0511

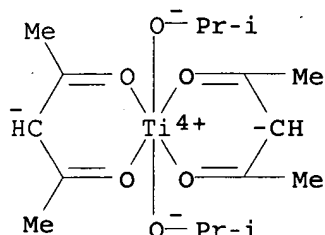
PRIORITY APPLN. INFO.: JP 2000-138309

2000
0511

AB The resin compns. contain (A) polyamic acids or/and polyimides derived from tetracarboxylic dianhydrides and polyamines having ≥ 3 amino groups and (B) the hydrolytic condensation reaction products of silane compds. $R_1aSi(OR_2)_4-a$ ($R_1 = H, F$, monovalent organic groups; $R_2 =$ monovalent organic groups; $a = 0-2$) or/and $R_3b(R_4O)_3-bSiXdSi(OR_5)_3-cR_6c$ ($R_3,4,5,6 =$ monovalent organic groups; $b, c = 0-2$; $X = C1-6$ alkylene; $d = 0$ or 1). Thus, mixing 9,9-bis(4-aminophenoxy)fluorene 79.2 with 2,7-diamino-9,9-bis(4-aminophenoxy)fluorene 2.9 and 2,2',3,3'-biphenyltetracarboxylic dianhydride 53.6 g in 800 mL AcNMe₂ at room temperature for 12 h, diluting the reaction mixture with 800 mL AcNMe₂, adding 88 mL pyridine and 69 mL Ac₂O, mixing at room temperature for 1 h, heating at 100° for 4 h, cooling, dropping into Et₂O, filtering, drying at 200° for 6 h, mixing 60 g the resulting solids with 240 g γ -butyrolactone and 3.6 g aminophenyltrimethoxysilane at room temperature for 12 h gave a silylated polyimide solution. Mixing the solution 15.1 with methyltrimethoxysilane 21.4, tetramethoxysilane 4.2, cyclohexanone 102.5 and titanium diisopropoxide bis(acetylacetonate) 2.6 g, heating to 60°, adding 4.2 g water to the resulting mixture over 1 h, mixing at 60° for 2 h and working up gave a resin solution which was spin-coated on a Si wafer to give a film with 5%-weight loss temperature 520°, permittivity 2.68 and freedom from cracking after dipping in water.

IT 17927-72-9, Titanium diisopropoxide bis(acetylacetonate) (curing catalyst; siliconized polyimide resin compns. for forming dielec. films with low dielec. constant and good resistance to heat and crack during chemical mech. planarization process)

RN 17927-72-9 HCAPLUS
 CN Titanium, bis(2,4-pentanedionato- κ O, κ O')bis(2-propanolato)- (9CI) (CA INDEX NAME)



IC ICM C09D179-08
 ICS C08G073-10; C08G077-08; C08J005-18; C08L079-08; C08L083-04;
 C08L083-14; C09D183-02; C09D183-04; C09D183-14; H01L021-312;
 H01L021-316
 CC 38-3 (Plastics Fabrication and Uses)
 Section cross-reference(s): 76
 IT Chelates
 (catalyst; siliconized polyimide resin compns. for forming
 dielec. films with low dielec. constant and good resistance to
 heat and crack during **chemical mech.**
planarization process)
 IT Acids, uses
 Bases, uses
 (curing catalyst; siliconized polyimide resin compns. for
 forming dielec. films with low dielec. constant and good
 resistance to heat and crack during **chemical mech.**
planarization process)
 IT Polysiloxanes, uses
 (polyamic acid-; siliconized polyimide resin compns. for
 forming dielec. films with low dielec. constant and good
 resistance to heat and crack during **chemical mech.**
planarization process)
 IT Polysiloxanes, uses
 (polyimide-; siliconized polyimide resin compns. for forming
 dielec. films with low dielec. constant and good resistance to
 heat and crack during **chemical mech.**
planarization process)
 IT Polyamic acids
 Polyimides, uses
 (polysiloxane-; siliconized polyimide resin compns. for forming
 dielec. films with low dielec. constant and good resistance to
 heat and crack during **chemical mech.**
planarization process)
 IT Crosslinking catalysts
 Dielectric films
 Hybrid organic-inorganic materials
 (siliconized polyimide resin compns. for forming dielec. films
 with low dielec. constant and good resistance to heat and crack
 during **chemical mech. planarization** process)
 IT 108-31-6, Maleic anhydride, uses 121-44-8, Triethylamine, uses
 17501-79-0 17927-72-9, Titanium diisopropoxide
 bis(acetylacetonate)
 (curing catalyst; siliconized polyimide resin compns. for
 forming dielec. films with low dielec. constant and good

resistance to heat and crack during **chemical mech. planarization** process)

L39 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2001:840467 HCAPLUS
 DOCUMENT NUMBER: 135:372701
 TITLE: Siliconized polyimide resin compositions for forming dielectric films with low dielectric constant and good resistance to heat and crack during **chemical mechanical planarization** process
 INVENTOR(S): Okada, Takashi; Matsubara, Minoru; Goto, Kohei
 PATENT ASSIGNEE(S): Jsr Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001316620	A2	20011116	JP 2000-138311	2000 0511

PRIORITY APPLN. INFO.: JP 2000-138311
 2000
 0511

AB The resin compns. contain (A) the hybrid products which are derived from the hydrolytic condensation reaction of hydrolyzable silyl group-containing polyamic acids or/and polyimides with silane compds. R1aSi(OR2)4-a (R1 = H, F, monovalent organic groups; R2 = monovalent organic groups; a = 0-2) or/and R3b(R4O)3-bSiXdSi(OR5)3-cR6c (R3,4,5,6 = monovalent organic groups; b, c = 0-2; X = C1-6 alkylene; d = 0 or 1), (B) the hydrolytic condensation reaction products of similar silane compds., and optionally other resins. Thus, mixing 9,9-bis(4-aminophenoxy)fluorene 79.2 with 2,7-diamino-9,9-bis(4-aminophenoxy)fluorene 2.9 and 2,2',3,3'-biphenyltetracarboxylic dianhydride 53.6 g in 800 mL AcNMe2 at room temperature for 12 h, diluting the reaction mixture with 800 mL AcNMe2, adding 88 mL pyridine and 69 mL Ac2O, mixing at room temperature for 1 h, heating at 100° for 4 h, cooling, dropping into Et2O, filtering, drying at 200° for 6 h, mixing 60 g the resulting solids with 240 g γ -butyrolactone and 3.6 g aminophenyltrimethoxysilane at room temperature for 12 h gave a silylated polyimide solution. Mixing the solution 15.1 with methyltrimethoxysilane 21.4, tetramethoxysilane 4.2, cyclohexanone 102.5 and titanium diisopropoxide bis(acetylacetonate) 2.6 g, heating to 60°, adding 4.2 g water to the resulting mixture over 1 h, mixing at 60° for 2 h and working up gave a resin solution which was spin-coated on a Si wafer to give a film with 5%-weight loss temperature 522°, permittivity 2.69 and freedom from cracking after dipping in water.

IT 9010-89-3, Adipic acid-diethylene glycol copolymer
 25036-49-1, Adipic acid-diethylene glycol copolymer sru
 25322-68-3, Polyethylene glycol
 (co-binder resin; siliconized polyimide resin compns. for forming dielec. films with low dielec. constant and good

resistance to heat and crack during **chemical mech.**
planarization process)

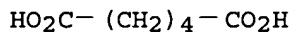
RN 9010-89-3 HCAPLUS

CN Hexanedioic acid, polymer with 2,2'-oxybis[ethanol] (9CI) (CA
INDEX NAME)

CM 1

CRN 124-04-9

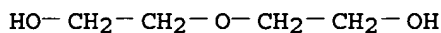
CMF C6 H10 O4



CM 2

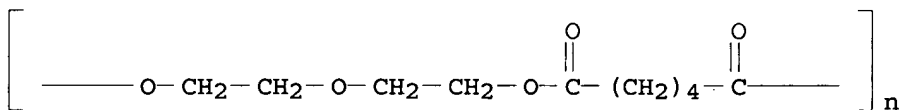
CRN 111-46-6

CMF C4 H10 O3



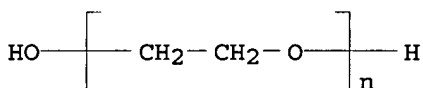
RN 25036-49-1 HCAPLUS

CN Poly[oxy-1,2-ethanediyl oxy-1,2-ethanediyl oxy(1,6-dioxo-1,6-
hexanediyl)] (9CI) (CA INDEX NAME)



RN 25322-68-3 HCAPLUS

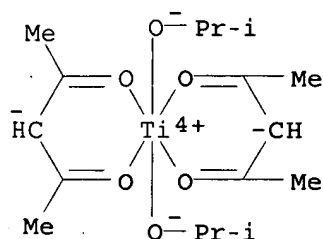
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)



IT 17927-72-9, Titanium diisopropoxide bis(acetylacetonate)
(curing catalyst; siliconized polyimide resin compns. for
forming dielec. films with low dielec. constant and good
resistance to heat and crack during **chemical mech.**
planarization process)

RN 17927-72-9 HCAPLUS

CN Titanium, bis(2,4-pentanedionato- κ O, κ O')bis(2-
propanolato)- (9CI) (CA INDEX NAME)



- IC ICM C09D179-04
ICS C08L033-00; C08L067-00; C08L069-00; C08L071-00; C08L079-08;
C08L083-02; C08L083-04; C09D183-02; C09D183-04; C09D183-14;
H01L021-312
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 76
- IT Crosslinking catalysts
(base or acid; siliconized polyimide resin compns. for forming
dielec. films with low dielec. constant and good resistance to
heat and crack during **chemical mech.**
planarization process)
- IT Acids, uses
Anhydrides
Chelates
(catalyst; siliconized polyimide resin compns. for forming
dielec. films with low dielec. constant and good resistance to
heat and crack during **chemical mech.**
planarization process)
- IT Polyanhydrides
Polycarbonates, uses
Polyesters, uses
Polyethers, uses
Polyoxyalkylenes, uses
(co-binder resin; siliconized polyimide resin compns. for
forming dielec. films with low dielec. constant and good
resistance to heat and crack during **chemical mech.**
planarization process)
- IT Amines, uses
(curing catalyst; siliconized polyimide resin compns. for
forming dielec. films with low dielec. constant and good
resistance to heat and crack during **chemical mech.**
planarization process)
- IT Polysiloxanes, uses
(polyamic acid-; siliconized polyimide resin compns. for
forming dielec. films with low dielec. constant and good
resistance to heat and crack during **chemical mech.**
planarization process)
- IT Polysiloxanes, uses
(polyimide-; siliconized polyimide resin compns. for forming
dielec. films with low dielec. constant and good resistance to
heat and crack during **chemical mech.**
planarization process)
- IT Polyamic acids
Polyimides, uses
(polysiloxane-; siliconized polyimide resin compns. for forming
dielec. films with low dielec. constant and good resistance to
heat and crack during **chemical mech.**
planarization process)

- IT Dielectric films
Heat-resistant materials
Hybrid organic-inorganic materials
(siliconized polyimide resin compns. for forming dielec. films with low dielec. constant and good resistance to heat and crack during **chemical mech. planarization** process)
- IT 9003-63-8, Butyl methacrylate polymer 9010-89-3
, Adipic acid-diethylene glycol copolymer 25036-49-1,
Adipic acid-diethylene glycol copolymer sru 25322-68-3,
Polyethylene glycol 26913-47-3, Poly(sebacic anhydride) sru
28803-92-1 159873-52-6, Methyltrimethoxysilane-
tetramethoxysilane copolymer
(co-binder resin; siliconized polyimide resin compns. for forming dielec. films with low dielec. constant and good resistance to heat and crack during **chemical mech. planarization** process)
- IT 108-31-6, Maleic anhydride, uses 121-44-8, Triethylamine, uses
17501-79-0 17927-72-9, Titanium diisopropoxide
bis(acetylacetonate)
(curing catalyst; siliconized polyimide resin compns. for forming dielec. films with low dielec. constant and good resistance to heat and crack during **chemical mech. planarization** process)

L39 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:27756 HCAPLUS

DOCUMENT NUMBER: 134:231104

TITLE: Synthesis and x-ray diffraction studies of
bis(4-propanoyl-2,4-dihydro-5-methyl-2-phenyl-
3H-pyrazol-3-onato) dioxomolybdenum(VI) and
[4-(1-trichloro-2-ethoxy)propanoyl-2,4-dihydro-
5-methyl-2-phenyl-3H-pyrazol-3-onato] [4-
trichloroacetyl-2,4-dihydro-5-methyl-2-phenyl-
3H-pyrazol-3-onato]dioxomolybdenum(VI)

AUTHOR(S): Uzoukwu, Bieluonwu A.; Gloe, Karsten;
Rademacher, Otto

CORPORATE SOURCE: Institut fur Anorganische Chemie, Technische
Universitat, Dresden, Germany

SOURCE: Zeitschrift fuer Anorganische und Allgemeine
Chemie (2001), 627(1), 108-113
CODEN: ZAACAB; ISSN: 0044-2313

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 134:231104

AB Two 4-acyl-2,4-dihydro-5-methyl-2-phenyl-3H-pyrazol-3-one
complexes of molybdenum(VI), (4-propanoyl-2,4-dihydro-5-methyl-2-
phenyl-3H-pyrazol-3-onato)dioxomolybdenum(VI), [MoO₂(C₂₆H₂₆N₄O₄)]
(1), and {4-(2,2,2-trichloro-1-ethoxy-1-hydroxyethyl)-2,4-dihydro-
5-methyl-2-phenyl-3H-pyrazol-3-onato}(4-trichloroacetyl-2,4-
dihydro-5-methyl-2-phenyl-3H-pyrazol-3-onato)dioxomolybdenum(VI),
[MoO₂(C₂₆H₂₁Cl₃N₄O₅)] (2), were synthesized from a reaction
between MoO₂II ion and 4-propanoyl and 4-trichloroacetyl derivs.
of 2,4-dihydro-5-methyl-2-phenyl-3H-pyrazol-3-one resp. The
complexes crystallized from solution with stereochem. that have remarkable
deviations from each other and modest deviation from octahedral
geometry. X-ray diffraction studies revealed that in 2 an ethoxy
moiety was introduced to one of the two ligand anions rather than
on the molybdenum atom due to a deprotonation reaction between the
complex and ethanol solvent. This unusual reaction in 2 lead to

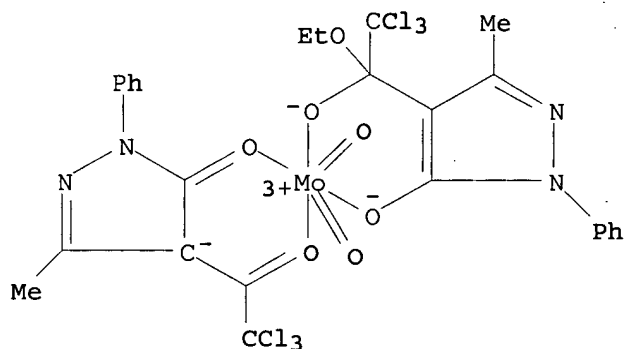
the destruction of the MoVI atom as a pseudo 2-fold center of inversion of the ligands, the non **planarity** of both the pyrazole rings and chelate rings of the ligand anions as is observed in 1. The yellow complex 1 crystallized in the orthorhombic space group Iba2 with a 9.6757(6), b 19.854(3), c 13.464(3) Å; Z = 4 and dc = 1.516 g cm⁻³. The yellow complex 2 crystallized in the triclinic space group P.hivin.1 with a 8.706(8), b 12.3155(15), c 16.179(2) Å; α 107.268(10), β 95.060(9), γ 104.822(8)°; Z = 2 and dc = 1.709 g cm⁻³. The UV, IR and ¹H NMR spectral data of the complexes are reported.

IT 329214-68-8P 329223-59-8P

(preparation and crystal structure)

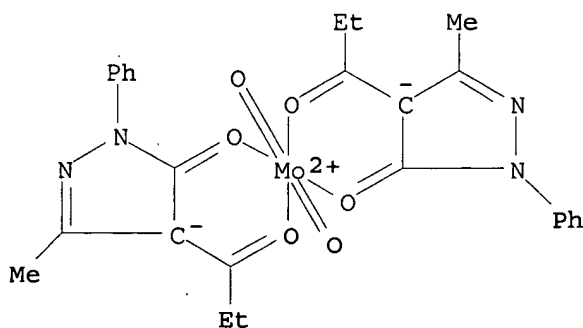
RN 329214-68-8 HCAPLUS

CN Molybdenum, [2,4-dihydro-5-methyl-2-phenyl-4-(trichloroacetyl-κO)-3H-pyrazol-3-onato-κO3][α-ethoxy-5-(hydroxy-κO)-3-methyl-1-phenyl-α-(trichloromethyl)-1H-pyrazole-4-methanolato(2-)-κO4]dioxo-, stereoisomer (9CI) (CA INDEX NAME)



RN 329223-59-8 HCAPLUS

CN Molybdenum, bis[2,4-dihydro-5-methyl-4-[1-(oxo-κO)propyl]-2-phenyl-3H-pyrazol-3-onato-κO3]dioxo-, (OC-6-13)- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 75

IT 329214-68-8P 329223-59-8P

(preparation and crystal structure)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE

FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L39 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:19097 HCAPLUS

DOCUMENT NUMBER: 134:73040

TITLE: Electrically insulating film-forming
compositions, their film formation and
low-density films therefrom
INVENTOR(S): Kurosawa, Takahiko; Hayashi, Eiji; Imano,
Keiji; Shiota, Atsushi; Yamada, Kinji; Goto,
Kohei

PATENT ASSIGNEE(S): Jsr Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001002993	A2	20010109	JP 1999-177695	1999 0624

PRIORITY APPLN. INFO.: JP 1999-177695

1999
0624

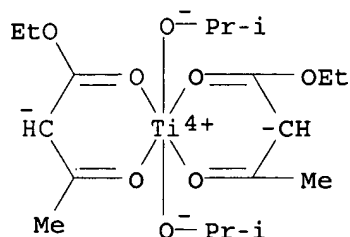
OTHER SOURCE(S): MARPAT 134:73040

AB Title compns. comprise (A) R₂R₃Si(OR₁)₂, R₂Si(OR₁)₃, Si(OR₁)₄, and/or R₂m(OR₁)₃-mSiR₃Si(OR₁)₃-nR₂n (R₁-R₃ = hydrocarbyl; R = hydrocarbylene; m, n = 0-1), and/or their hydrolyzates, (B) (meth)acrylate polymers containing 0.1-10 mol% alkoxysilyl-containing monomers, and (C) solvents selected from alcs., ketones, amides, and esters. Dropwise adding an aqueous solution of maleic acid into a solution comprising MeSi(OMe)₃, 1,2-bis(triethoxysilyl)ethane, iso-Bu methacrylate-3-(trimethoxysilyl)propyl methacrylate copolymer, Me n-pentyl ketone, and propylene glycol mono-Pr ether and reacting at 60° gave a composition, which was spin coated on a Si wafer, heated at 80-200°, and at 340-425° in vacuo to form a transparent film with d. of 1.1 g/cm³, no pores with diameter of ≥10 nm, modulus 4.1 GPa, and no scratch under chemical-mech. polishing process.

IT 27858-32-8, Di(isopropoxy)bis(ethylacetoacetato)titanium (acrylic resin- and alkoxysilane-containing coatings for manufacture of elec. insulating low-d. porous polysiloxane films)

RN 27858-32-8 HCAPLUS

CN Titanium, bis[ethyl 3-(oxo-κO)butanoato-κO']bis(2-propanolato)- (9CI) (CA INDEX NAME)



IC ICM C09D183-04
ICS C08L033-02; C08L083-04; C09D133-02
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 76
ST polysiloxane elec insulating low d porous film; chem mech
polishing resistance polysiloxane porous elec insulating
film; semiconductor device porous polysiloxane elec insulating low
d film; acrylic polymer alkoxy silane coating manuf porous
polysiloxane film
IT Acrylic **polymers**, uses
Polysiloxanes, uses
(acrylic resin- and alkoxy silane-containing coatings for manufacture of
elec. insulating low-d. porous polysiloxane films)
IT 110-16-7, Maleic acid, uses 144-62-7, Oxalic acid, uses
27858-32-8, Di(isopropoxy)bis(ethylacetoacetato)titanium
(acrylic resin- and alkoxy silane-containing coatings for manufacture of
elec. insulating low-d. porous polysiloxane films)

L39 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:865401 HCAPLUS

DOCUMENT NUMBER: 134:43456

TITLE: Production of polysiloxane-based composition
for electric insulating coating film

INVENTOR(S): Nishikawa, Michinori; Kakuta, Mayumi;
Hakamazuka, Akiko; Ebisawa, Masahiko; Yamada,
Kinji

PATENT ASSIGNEE(S): JSR Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000344893	A2	20001212	JP 1999-154630	1999 0602

PRIORITY APPLN. INFO.: JP 1999-154630

1999

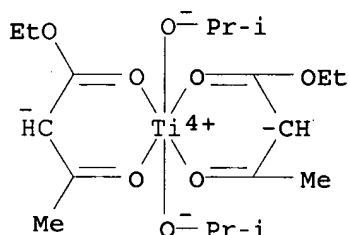
0602

OTHER SOURCE(S): MARPAT 134:43456

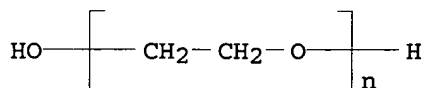
AB Title coating film for semiconductor elements with suitable
uniform thickness, good dielec. constant, storage stability and
CMP-resistance is prepared by hydrolysis of ≥ 1 silane

compound selected from (A-1) $R_1aSi(OR_2)_4-a$ (R_1 : H, F, monovalent organic group; R_2 : monovalent organic group; $a = 0-2$) and (A-2) $R_3b(R_4O)_3-bSi(R_7)dSi(OR_5)_3-cR_6c$ [R_3 , R_4 , R_5 , and R_6 : monovalent organic group; b , $c = 0-2$; R_7 : O, $-(CH_2)_n$; $d = 0-1$; $n = 1-6$] in the presence of solvent (B) $R_8O(CHCH_3CH_2O)_dR_9$ (R_8 , R_9 : H, C1-4 alkyl, CH_3CO -; $d = 1-2$) and alc. (C) having b.p. at normal pressure $<100^\circ$. Thus a composition prepared by reaction of methyltrimethoxysilane with bis(triethoxysilyl)methane in the presence of propylene glycol monomethyl ether and ethanol was spin-coated on a silicone wafer for testing, showing dielec. constant 2.67, good storage stability, and **CMP** (chemical-mech. **polishing**)-resistance.

- IT 27858-32-8, Diisopropoxytitanium bis(ethylacetylacetate)
(catalyst; production of polysiloxane-based composition for elec.
insulating coating film)
RN 27858-32-8 HCAPLUS
CN Titanium, bis[ethyl 3-(oxo- κ O)butanoato- κ O']bis(2-
propanolato)- (9CI) (CA INDEX NAME)



- IT 25322-68-3, Poly(ethylene glycol)
(composition containing; production of polysiloxane-based composition for
elec. insulating coating film)
RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI)
(CA INDEX NAME)



- IC ICM C08G077-18
ICS C08G077-50; C09D183-06; C09D183-14; H01L021-312
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 37
IT **Polymerization**
Polymerization catalysts
(production of polysiloxane-based composition for elec. insulating
coating film)
IT 110-16-7, Maleic acid, uses 27858-32-8,
Diisopropoxytitanium bis(ethylacetylacetate)
(catalyst; production of polysiloxane-based composition for elec.
insulating coating film)
IT 123-54-6, Acetylacetone, uses 25322-68-3, Poly(ethylene
glycol) 26655-94-7, Poly(isopropyl methacrylate)
(composition containing; production of polysiloxane-based composition for
elec.

insulating coating film)

L39 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:801138 HCAPLUS

DOCUMENT NUMBER: 123:305036

TITLE: Synthesis and characterization of mononuclear and dinuclear adducts of carbamylmethylenephosphonate with uranyl bis(β -diketonates)

AUTHOR(S): Kannan, S.; Venugopal, V.

CORPORATE SOURCE: Fuel Chemistry Div., Bhabha Atomic Res. Centre, Bombay, 400085, India

SOURCE: Polyhedron (1995), 14(17/18), 2349-54
CODEN: PLYHDE; ISSN: 0277-5387

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

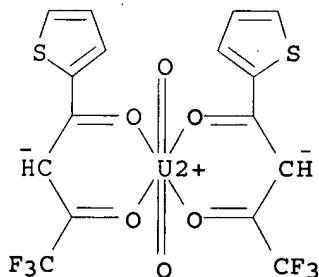
LANGUAGE: English

AB The carbamylmethylenephosphonate adducts of uranyl bis(β -diketonates) $[\text{UO}_2(\text{L})_2(\text{CMP})]$ and $[\{\text{UO}_2(\text{L})_2\}_2(\text{CMP})]$ (HL = thenoyltrifluoroacetone or dibenzoylmethane, **CMP** = di-Bu or dihexyl (N,N-diethylcarbamyl)methylenephosphonate) were prepared and characterized by elemental anal., IR and multinuclear NMR techniques. The spectral studies show that **CMP** acts as a monodentate ligand in $[\text{UO}_2(\text{L})_2(\text{CMP})]$ and coordinates through the phosphoryl O atom, whereas it acts as a bridging bidentate ligand in $[\{\text{UO}_2(\text{L})_2\}_2(\text{CMP})]$ and coordinates through both the carbonyl and phosphoryl O atoms.

IT 18444-18-3, Dioxobis(thenoyltrifluoroacetato)uranium
18702-97-1, Bis(dibenzoylmethanato)dioxouranium
(for preparation of uranyl diketonate carbamylmethylenephosphonate complex)

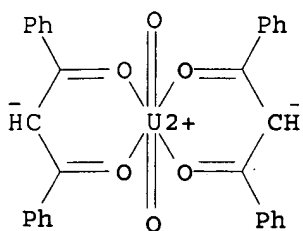
RN 18444-18-3 HCAPLUS

CN Uranium, dioxobis[4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato- $\kappa\text{O},\kappa\text{O}'$]- (9CI) (CA INDEX NAME)



RN 18702-97-1 HCAPLUS

CN Uranium, bis(1,3-diphenyl-1,3-propanedionato- $\kappa\text{O},\kappa\text{O}'$)dioxo-, (OC-6-11)- (9CI) (CA INDEX NAME)



IT 162340-57-0P 169782-59-6P 169782-60-9P
169782-61-0P 169782-62-1P 169782-63-2P
(preparation of)

RN 162340-57-0 HCAPLUS

CN Uranium, [dibutyl [2-(diethylamino)-2-oxoethyl]phosphonate]dioxobis[4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato-O,O']- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 169782-59-6 HCAPLUS

CN Uranium, [dibutyl [2-(diethylamino)-2-oxoethyl]phosphonate]bis(1,3-diphenyl-1,3-propanedionato-O,O')dioxo-, (PB-7-33-1222'2')- (9CI)
(CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 169782-60-9 HCAPLUS

CN Uranium, [μ-[dibutyl [2-(diethylamino)-2-oxoethyl]phosphonate]]tetraoxotetrakis[4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato-O,O']di- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 169782-61-0 HCAPLUS

CN Uranium, [μ-[dibutyl [2-(diethylamino)-2-oxoethyl]phosphonate]]tetrakis(1,3-diphenyl-1,3-propanedionato-O,O')tetraoxodi- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 169782-62-1 HCAPLUS

CN Uranium, [μ-[dihexyl [2-(diethylamino)-2-oxoethyl]phosphonate]]tetraoxotetrakis[4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato-O,O']di- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 169782-63-2 HCAPLUS

CN Uranium, [μ-[dihexyl [2-(diethylamino)-2-oxoethyl]phosphonate]]tetrakis(1,3-diphenyl-1,3-propanedionato-O,O')tetraoxodi- (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 78-7 (Inorganic Chemicals and Reactions)

IT 7369-66-6 7439-68-1 18444-18-3,
Dioxobis(thenoyltrifluoroacetato)uranium 18702-97-1,
Bis(dibenzoylmethanato)dioxouranium
(for preparation of uranyl diketonate carbamylmethylenephosphonate complex)

IT 162340-57-0P 169782-59-6P 169782-60-9P
169782-61-0P 169782-62-1P 169782-63-2P
(preparation of)

L39 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1994:568941 HCAPLUS

DOCUMENT NUMBER: 121:168941

TITLE: Spectroscopic investigation of mixed-ligand nickel(II) chelates containing β -ketoenols and 1,2-diamines

AUTHOR(S): Tsiamis, Chris; Alkam, Hussein H.; Hadjikostas, Christos C.

CORPORATE SOURCE: Department of Chemistry, University of Thessaloniki, Thessaloniki, 54006, Greece

SOURCE: Inorganica Chimica Acta (1994), 221(1-2), 17-24

CODEN: ICHAA3; ISSN: 0020-1693

DOCUMENT TYPE: Journal

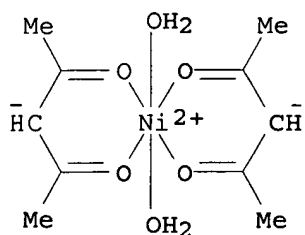
LANGUAGE: English

AB The IR and electronic excitation spectra of new Ni(II) chelates containing N-substituted 1,2-diaminoethane derivs. (enR) and the anion of a 1,3-ketoenol (β -dione) were obtained in the solid state and in solution. The composition and the overall structure of the new chelates depend on ligand concentration, on the substituents within the β -dionato moiety and the counterion present. Whenever the substituents and bulky counteranions fail to stabilize the $[\text{Ni}(\beta)\text{enR}]^+$ entity, a 2nd diamine mol. confers coordination saturation and the octahedral $[\text{Ni}(\text{enR})_2\beta]^+$ species are obtained. The IR spectra disclose that the 1,2-diamines adopt the gauche conformation. The ligand-field excitation spectra and solvatochromic shifts suggest that in the $[\text{Ni}(\beta)\text{enR}]^+$ entity, the NiN2O2 chromophore is square-planar and the diamine nitrogens are coplanar with the resonance stabilized β -dionato ring. Ni(II) in the $[\text{Ni}(\beta)\text{enR}]^+$ entity interacts covalently with basic solvents, halides, pseudohalides, and other polyat. anions. While unidentate ligands preserve the planarity of the NiN2O2 chromophore, the spatial requirements and restrictions of bidentate ligands induce rearrangements and octahedral coordination.

IT 14024-81-8P, Bis(acetylacetonato)diaquanickel
28413-02-7P, Diaquabis(benzoylacetonato)nickel
30383-81-4P, Diaquabis(4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato)nickel 42055-47-0P,
Diaquabis(dibenzoylmethanato)nickel 60841-83-0P,
Diaquabis(4,4,4-trifluoro-1-phenyl-1,3-butanedionato)nickel
93121-47-2P, Diaquabis(1,1,1-trifluoro-2,4-pentanedionato)nickel 98088-59-6P,
Diaquabis(hexafluoroacetylacetonato)nickel 157595-14-7P,
Diaquabis(dipivaloylmethanato)nickel
(preparation and reaction of, with nickel salts followed by N-alkylated ethylenediamines)

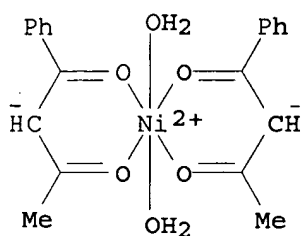
RN 14024-81-8 HCAPLUS

CN Nickel, diaquabis(2,4-pentanedionato- $\kappa\text{O}, \kappa\text{O}'$)- (9CI)
(CA INDEX NAME)



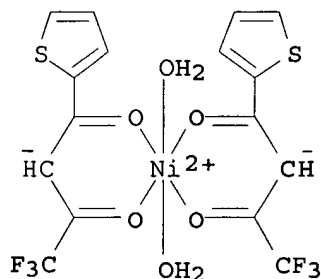
RN 28413-02-7 HCAPLUS

CN Nickel, diaquabis(1-phenyl-1,3-butanedionato- κ O, κ O') - (9CI) (CA INDEX NAME)



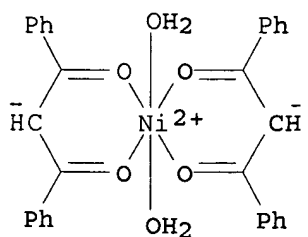
RN 30383-81-4 HCAPLUS

CN Nickel, diaquabis[4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato- κ O, κ O'] - (9CI) (CA INDEX NAME)



RN 42055-47-0 HCAPLUS

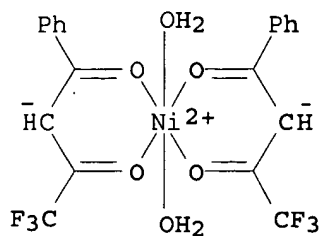
CN Nickel, diaquabis(1,3-diphenyl-1,3-propanedionato- κ O, κ O') - (9CI) (CA INDEX NAME)



RN 60841-83-0 HCAPLUS

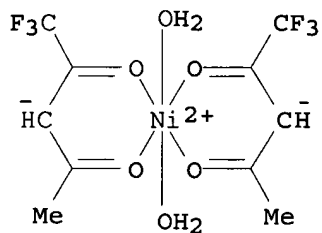
CN Nickel, diaquabis(4,4,4-trifluoro-1-phenyl-1,3-butanedionato-

$\kappa O, \kappa O'$ - (9CI) (CA INDEX NAME)



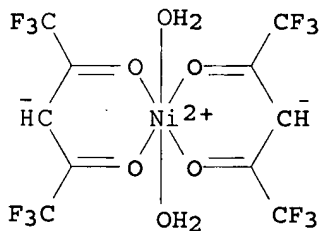
RN 93121-47-2 HCAPLUS

CN Nickel, diaquabis(1,1,1-trifluoro-2,4-pentanedionato- $\kappa O, \kappa O'$) - (9CI) (CA INDEX NAME)



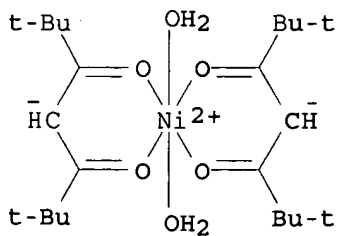
RN 98088-59-6 HCAPLUS

CN Nickel, diaquabis(1,1,1,5,5,5-hexafluoro-2,4-pentanedionato- $\kappa O, \kappa O'$) - (9CI) (CA INDEX NAME)



RN 157595-14-7 HCAPLUS

CN Nickel, diaquabis(2,2,6,6-tetramethyl-3,5-heptanedionato-0,0') - (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)

IT 14024-81-8P, Bis(acetylacetonato)diaquanickel

28413-02-7P, Diaquabis(benzoylacetonato)nickel
 30383-81-4P, Diaquabis(4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionato)nickel 42055-47-0P,
 Diaquabis(dibenzoylmethanato)nickel 60841-83-0P,
 Diaquabis(4,4,4-trifluoro-1-phenyl-1,3-butanedionato)nickel
 93121-47-2P, Diaquabis(1,1,1-trifluoro-2,4-pentanedionato)nickel 98088-59-6P,
 Diaquabis(hexafluoroacetylacetonato)nickel 157595-14-7P,
 Diaquabis(dipivaloylmethanato)nickel
 (preparation and reaction of, with nickel salts followed by
 N-alkylated ethylenediamines)

L39 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1994:123375 HCAPLUS

DOCUMENT NUMBER: 120:123375

TITLE: A study of the exchange interaction through phenolato, oximato and oxamidato bridges in MnIICuII dimers. Crystal structure of [Cu(salen)Mn(hfa)2]

AUTHOR(S): Ruiz, Rafael; Lloret, Francesc; Julve, Miguel; Faus, Juan; Munoz, M. Carmen; Solans, Xavier

CORPORATE SOURCE: Departament de Química Inorganica, Facultat de Química, Universitat de Valencia, Dr. Moliner 50, Burjassot (Valencia), 46100, Spain

SOURCE: Inorganica Chimica Acta (1993), 213(1-2), 261-8

CODEN: ICHAA3; ISSN: 0020-1693

DOCUMENT TYPE: Journal

LANGUAGE: English

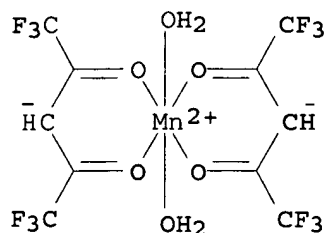
AB Heterodinuclear [Cu(salen)Mn(hfa)2] (1), [Cu(pdmg)Mn(phen)2] (ClO4)2.2.5H2O (2), and [Cu(apox)Mn(bpy)2] (ClO4)2.0.5H2O (3) (H2salen = N,N'-ethylenebis(salicylideneimine), Hhfa = hexafluoroacetylacetone, H2pdmg = 3,9-dimethyl-4,8-diazaundeca-3,8-diene-2,10-dione dioxime, phen = 1,10-phenanthroline, H2apox = N,N'-bis(3-aminopropyl)oxamide, bpy = 2,2'-bipyridine) were synthesized. 1 Crystallizes as triclinic, space group P.hivin.1, a 15.584(4), b 12.039(3), c 9.470(2) Å, α 113.83(2), β 107.17(3), γ 84.28(3)°, R = Rw = 0.069. In 1, imine N and phenolate O atoms from salen2- are bound to the Cu forming a 4-folding surrounding slightly deviating from planarity whereas 6 O atoms (2 from salen2- and 4 from the 2 hfa- ligands) define a distorted octahedral environment around the Mn atom. The CuO2Mn bridging network is bent (dihedral angle = 14.6°). The magnetic properties of 1-3 were investigated at 4.2-300 K. They correspond to what is expected for an antiferromagnetically coupled CuIIMnII pair with SCu = 1/2 and SMn = 5/2 local spins. The coupling constant (J) was evaluated as -22.4, -50.3, and -24.5 cm-1 for 1-3, resp. The larger value of |J| for 2 confirms the great efficiency of the oximate bridge to transmit the electronic effects between metal centers separated by >3.5 Å.

IT 106228-25-5

(reaction of, with copper ethylenebis(salicylideneiminato) complex)

RN 106228-25-5 HCAPLUS

CN Manganese, diaquabis(1,1,1,5,5,5-hexafluoro-2,4-pentanedionato-κO,κO')-, (OC-6-21)- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 75, 77

IT 106228-25-5

(reaction of, with copper ethylenebis(salicylideneiminato) complex)

L39 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1992:142760 HCAPLUS

DOCUMENT NUMBER: 116:142760

TITLE: Synthesis and spectral studies of cobalt(II), nickel(II) and copper(II) complexes of 1-(2-hydroxy-1-naphthyl)-3-(4-X-phenyl)-2-propen-1-ones and their pyridine adducts

AUTHOR(S): Natarajan, Chidambaram; Shanthi, Padmanabhan; Athappan, Periakaruppan; Murugesan, Ramachandran

CORPORATE SOURCE: Sch. Chem., Madurai Kamaraj Univ., Madurai, 625 021, India

SOURCE: Transition Metal Chemistry (Dordrecht, Netherlands) (1992), 17(1), 39-45
CODEN: TMCHDN; ISSN: 0340-4285

DOCUMENT TYPE: Journal

LANGUAGE: English

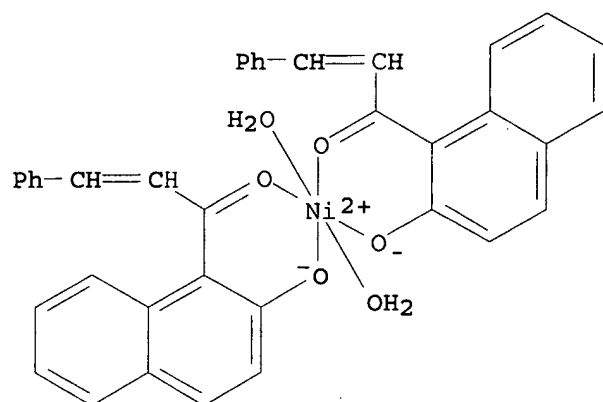
AB ML2.nQ [M = Co, Ni, Cu; HL = 1-(2-hydroxy-1-naphthyl)-3-(4-X-phenyl)-2-propen-1-one (X = H, Cl, or Me); Q = H2O, py; n = 0, 2] were prepared by in situ ring opening of 5,6-benzoflavanones and also from the corresponding chalcones. Structures were assessed by magnetic measurements, IR electronic, and EPR spectra, and by thermal studies. CuL2 are monomers and possess square-planar geometry, while the corresponding CoII and NiII complexes are polymers with a high-spin trans-octahedral configuration. The py complexes have a high-spin trans-octahedral configuration. IR studies indicate that $\nu(\text{C}=\text{O})$ and $\nu(\text{M}-\text{O})$ frequencies are affected by metal-ion and by Ph substitution and adduct formation. EPR spectral studies indicate a higher degree of covalency in the in-plane σ -bonded pyridine adducts of the Cu complexes than do the parent chalcone complexes. The relatively low ligand field strength of HL compared to 2'-hydroxychalcones is attributed to the inhibition of extensive conjugation arising from deviation of the naphthoyl group from planarity.

IT 139581-96-7P 139581-97-8P 139581-98-9P
139582-12-0P 139582-13-1P

(preparation and IR and UV spectra and dehydration of)

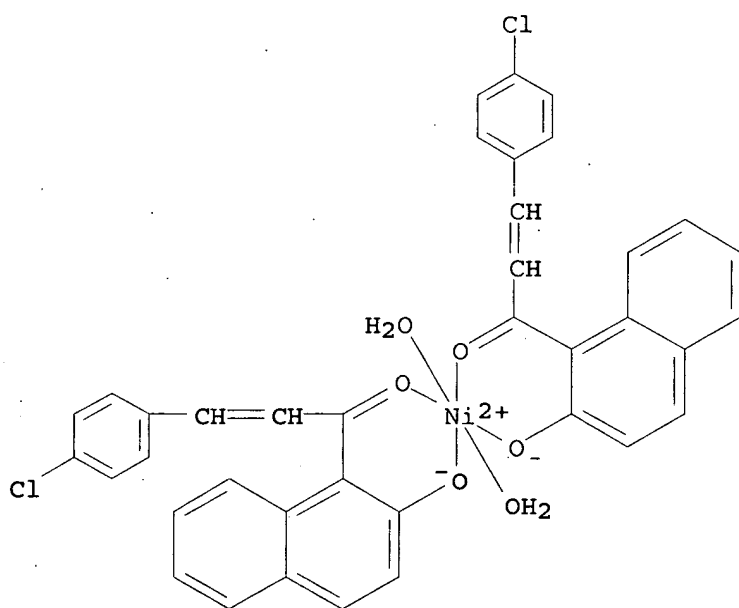
RN 139581-96-7 HCAPLUS

CN Nickel, diaquabis[1-(2-hydroxy-1-naphthalenyl)-3-phenyl-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)



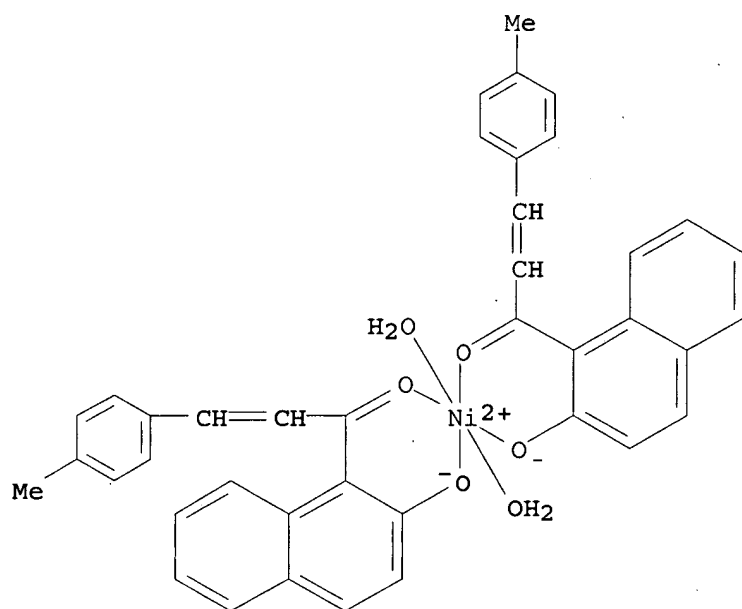
RN 139581-97-8 HCAPLUS

CN Nickel, diaquabis[3-(4-chlorophenyl)-1-(2-hydroxy-1-naphthalenyl)-2-propen-1-onato-O,O']-(9CI) (CA INDEX NAME)



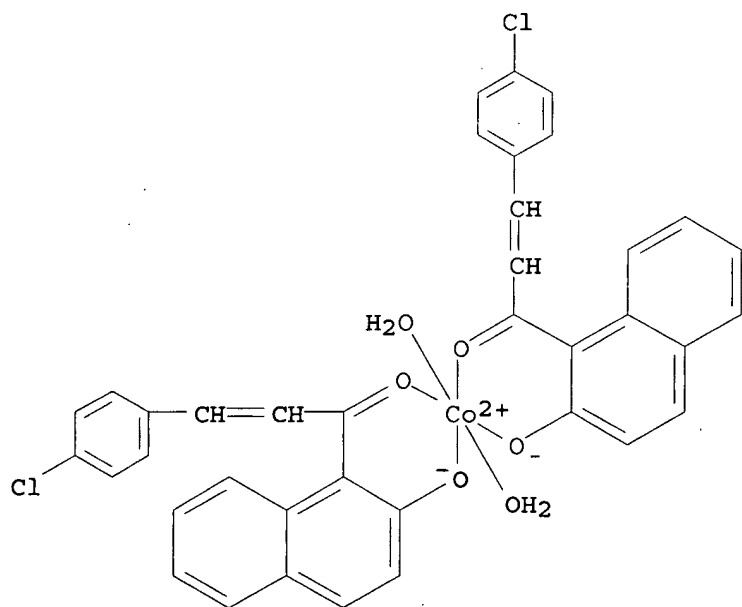
RN 139581-98-9 HCAPLUS

CN Nickel, diaquabis[1-(2-hydroxy-1-naphthalenyl)-3-(4-methylphenyl)-2-propen-1-onato-O,O']-(9CI) (CA INDEX NAME)



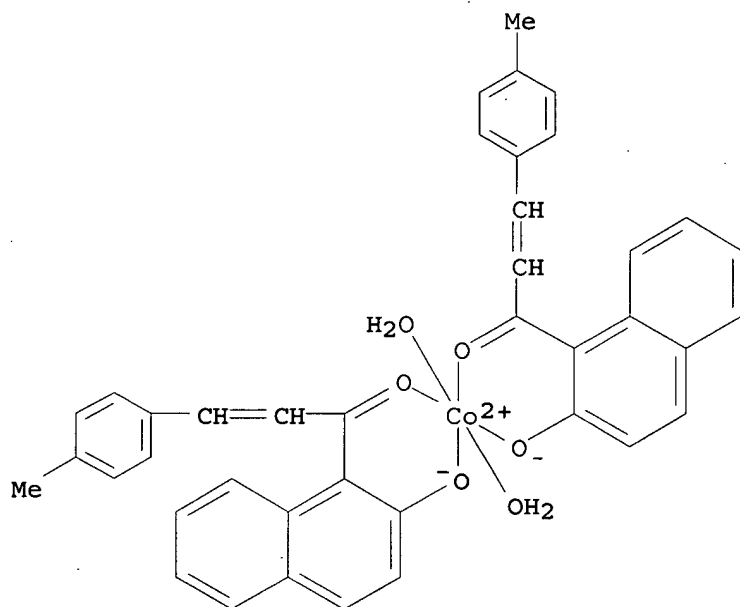
RN 139582-12-0 HCAPLUS

CN Cobalt, diaquabis[3-(4-chlorophenyl)-1-(2-hydroxy-1-naphthalenyl)-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)



RN 139582-13-1 HCAPLUS

CN Cobalt, diaquabis[1-(2-hydroxy-1-naphthalenyl)-3-(4-methylphenyl)-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)

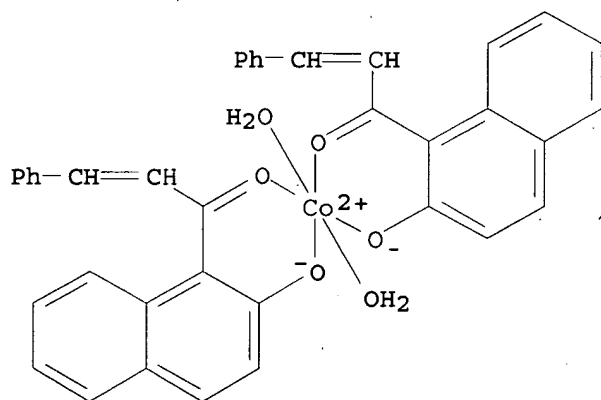


IT 139582-05-1P

(preparation and UV spectrum and dehydration of)

RN 139582-05-1 HCAPLUS

CN Cobalt, diaquabis[1-(2-hydroxy-1-naphthalenyl)-3-phenyl-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)

IT 139581-96-7P 139581-97-8P 139581-98-9P

139582-12-0P 139582-13-1P

(preparation and IR and UV spectra and dehydration of)

IT 139582-05-1P

(preparation and UV spectrum and dehydration of)

L39 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:538351 HCAPLUS

DOCUMENT NUMBER: 115:138351

TITLE: Oxide film-forming coatings and method of their application

INVENTOR(S): Uchimura, Shunichiro; Morishima, Hiroyuki;
 Sato, Tonobu; Shimamura, Yasuo
 PATENT ASSIGNEE(S): Hitachi Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03020377	A2	19910129	JP 1989-154843	1989 0616

PRIORITY APPLN. INFO.: JP 1989-154843

1989
0616

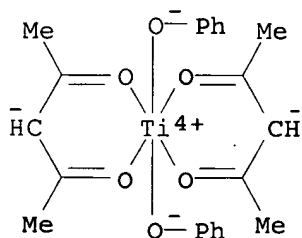
OTHER SOURCE(S): MARPAT 115:138351

AB Title coatings, useful for **planarization** and interlayer insulation in microelectronics, comprise **polymers** obtained by hydrolyzing $RnSi(OR_1)_{4-n}$ ($R, R_1 = C1-4$ alkyl, aryl; $n = 0-2$) and $R_2lM(OR_3)_{m-1}$ ($R_2 =$ chelating agent; $R_3 =$ same as R ; $M =$ metal; $m =$ valence of M ; $l = 0-3$) in the presence of an organic solvent and are applied to a substrate and sintered to form crack-resistant oxide films. Thus, an EtOH solution containing $(EtO)_4Si$ 68.74, $(MeO)_3SiMe$ 34.05, and diisopropoxyaluminum Et acetoacetate chelate (I) 68.58 g was hydrolyzed by dropwise addition of H_3PO_4 -acidified H_2O and heated at 60° to give a coating, which was applied by a spinning at 2000 rpm to a Si wafer, dried at 150° , and sintered in air at 600° to form a 0.8 μ m-thick crack-free film. The film showed no cracking when further treated in an O plasma ashing apparatus while an oxide film from a control prepared without I was crack-free by sintering up to 450° but showed cracking when sintered at 600° or treated by O plasma.

IT 54548-77-5DP, hydrolytic polycondensation products with silanes
 (preparation of, coatings, forming crack-resistant oxide films by sintering, for microelectronics)

RN 54548-77-5 HCAPLUS

CN Titanium, bis(2,4-pentanedionato-O,O')diphenoxy-, (OC-6-21)- (9CI)
 (CA INDEX NAME)



IC ICM C09D183-14
 ICS C09D185-00

CC 42-10 (Coatings, Inks, and Related Products)
 Section cross-reference(s): 35, 76

ST oxide forming coating sintering microelectronic; silane
 hydrolyzate coating oxide forming; metal chelate hydrolyzate
 coating; **planarization** oxide film coating electronic;
 insulation oxide film coating electronic

IT Electric apparatus
 Semiconductor devices
 (sintering of oxide-forming **polymers** for coating of)

IT 78-10-4DP, hydrolytic polycondensation products with metal
 chelates 681-84-5DP, Tetramethoxysilane, hydrolytic
 polycondensation products with metal chelates 1112-39-6DP,
 Dimethyldimethoxysilane, hydrolytic polycondensation products with
 metal chelates 1185-55-3DP, Methyltrimethoxysilane, hydrolytic
 polycondensation products with metal chelates 14782-75-3DP,
 hydrolytic polycondensation products with silanes
54548-77-5DP, hydrolytic polycondensation products with
 silanes 135568-76-2DP, hydrolytic polycondensation products with
 silanes 136239-43-5DP, hydrolytic polycondensation products with
 silanes
 (preparation of, coatings, forming crack-resistant oxide films by
 sintering, for microelectronics)

L39 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1989:146318 HCAPLUS

DOCUMENT NUMBER: 110:146318

TITLE: Single-layer or multilayer ceramic coatings
 from silicate esters and metal oxides

INVENTOR(S): Haluska, Loren A.; Michael, Keith W.; Tarhay,
 Leo

PATENT ASSIGNEE(S): Dow Corning Corp., USA

SOURCE: U.S., 14 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 4753856	A	19880628	US 1987-217	1987 0102
CA 1329739	A1	19940524	CA 1987-554210	1987 1214
JP 63178532	A2	19880722	JP 1987-330346	1987 1228
JP 06042479	B4	19940601		
EP 274274	A2	19880713	EP 1987-311481	1987 1229
EP 274274	A3	19881207		
EP 274274	B1	19940323		
R: DE, FR, GB, IT, NL				
CN 87107417	A	19880817	CN 1987-107417	1987 1229

CN 1012494	B	19910501			
ES 2005496	A6	19890301	ES 1987-3757		
				1987	
				1230	
US 4997482	A	19910305	US 1989-411753		
				1989	
				0925	
PRIORITY APPLN. INFO.:			US 1987-217	A	
				1987	
				0102	
			US 1988-167228	B1	
				1988	
				0311	

OTHER SOURCE(S): MARPAT 110:146318

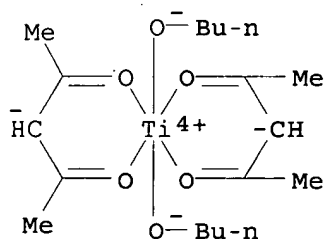
AB Methods for preparing the title coatings are described in which a preceramic mixture comprising a partially or completely hydrolyzed silicate ester and a metal oxide precursor selected from Al alkoxides, Ti alkoxides, and/or Zr alkoxides in a solvent is applied to a substrate and ceramified by heating at 200-1000°. Addnl. ceramic coatings containing Si-C, Si-N, or Si-C-N can be applied over the ceramified SiO₂/metal oxide coating (e.g., using chemical vapor deposition or plasma-enhanced chemical vapor deposition). Methods of forming a Si-N-containing coating, entailing coating a substrate with a solution containing a preceramic **polymer** produced by combining a cyclic silazane or a mixture of cyclic silazanes with a halodisilane or halosilane, are described. Application as **planarizing** coatings for electronic devices is indicated.

IT 16902-59-3

(in ceramic coating preparation)

RN 16902-59-3 HCAPLUS

CN Titanium, dibutoxybis(2,4-pentanedionato-κO,κO')-(9CI) (CA INDEX NAME)



IC ICM B32B009-00

INCL 428698000

CC 76-14 (Electric Phenomena)

Section cross-reference(s): 57

ST silicate ester metal oxide ceramic precursor; aluminum alkoxide silicate ester ceramic precursor; titanium alkoxide silicate ester ceramic precursor; zirconium alkoxide silicate ester ceramic precursor; **planarizing** ceramic prepn electronics; halosilane cyclosilazane ceramic precursor; halodisilane cyclosilazane ceramic precursor; cyclosilazane silane deriv ceramic precursor

IT Semiconductor devices

(ceramic **planarizing** coatings for, preparation of)
 IT 78-10-4, Ethylorthosilicate 999-97-3, Hexamethylsilazane
 1343-98-2D, Silicic acid, esters 1590-87-0D, Disilane, derivs.,
 reaction products with silazanes 7803-62-5D, Silane, derivs.,
 reaction products with silazanes 13830-68-7, Hexafluorodisilane
 13963-57-0 **16902-59-3** 17501-44-9

(in ceramic coating preparation)

IT 7631-86-9, Silica, uses and miscellaneous 117728-44-6, Silicon
 zirconium oxide (SiO.83Zr0.17O2) 117728-45-7, Silicon zirconium
 oxide (SiO.89Zr0.11O2) 117728-49-1, Silicon titanium zirconium
 oxide (SiO.87Ti0.08Zr0.05O2) 117728-53-7, Silicon zirconium
 oxide (SiO.95Zr0.05O2) 117962-84-2, Silicon titanium oxide
 (SiO.91Ti0.09O2) 118821-25-3, Aluminum oxide silicate
 (Al3.92O2(Si2O5)3.88) 118821-26-4, Aluminum oxide silicate
 (Al200.49(Si2O5)2.51) 118821-27-5 118821-28-6, Titanium oxide
 silicate (Ti4.46O2(Si2O5)6.92)

(**planarizing** coatings from, preparation of, from silicate
 esters and metal oxides)

L39 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1988:541507 HCAPLUS

DOCUMENT NUMBER: 109:141507

TITLE: Cobalt(II), nickel(II) and copper(II)
 complexes of 1-hydroxy-2-naphthyl(4-X-
 styryl)ketones

AUTHOR(S): Natarajan, Chidambaram; Tharmaraj, Paulmoney

CORPORATE SOURCE: Dep. Inorg. Chem., Madurai Kamaraj Univ.,
 Madurai, 625021, India

SOURCE: Transition Metal Chemistry (Dordrecht,
 Netherlands) (1987), 12(6), 553-7
 CODEN: TMCHDN; ISSN: 0340-4285

DOCUMENT TYPE: Journal

LANGUAGE: English

AB ML2 [M = Co, Ni, Cu; HL = 1-hydroxy-2-naphthyl (4-X-styryl)
 ketone, (X = H, Me, Cl, MeO)], ML2.2H2O (M = Co, Ni) and ML2.2py
 (M = Co, Ni) were prepared and characterized by element analyses,
 IR, ligand field spectra, magnetic moments and thermal studies.
 CuL2 are monomers of trans-square-planar configuration. ML2.2H2O
 have a high-spin trans-octahedral structure. CoL2 and NiL2 are
polymeric. ML2.2py have high-spin trans-octahedral
 geometry. The $\nu(M-O)$ order, namely $Cu > Ni > Co$, parallels the
 Irving-Williams order. The weak ligand field strength of L is
 ascribed to inhibition of extensive conjugation arising from
 deviation of the naphthoyl group from **planarity**.

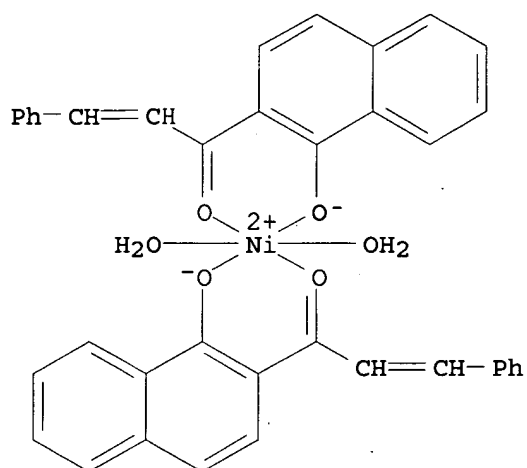
IT 116483-84-2P 116483-86-4P 116483-87-5P

116483-94-4P 116483-95-5P 116523-46-7P

(preparation and thermal dehydration of)

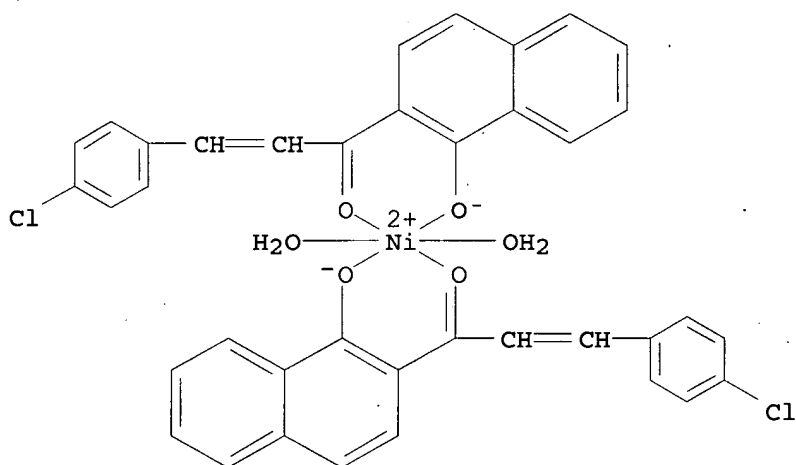
RN 116483-84-2 HCAPLUS

CN Nickel, diaquabis[1-(1-hydroxy-2-naphthalenyl)-3-phenyl-2-propen-1-
 onato-O,O']- (9CI) (CA INDEX NAME)



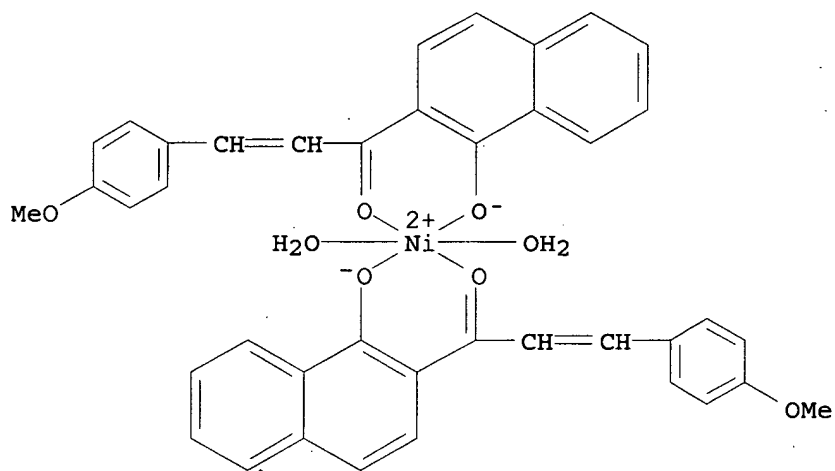
RN 116483-86-4 HCAPLUS

CN Nickel, diaquabis[3-(4-chlorophenyl)-1-(1-hydroxy-2-naphthalenyl)-2-propen-1-onato-0,0']-(9CI) (CA INDEX NAME)



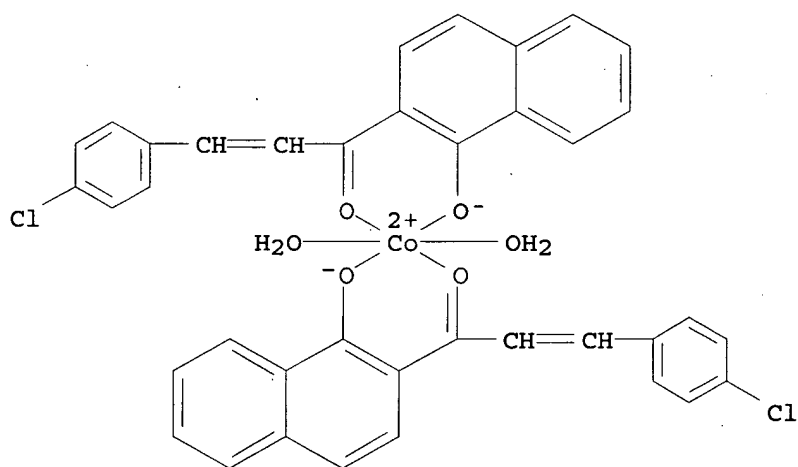
RN 116483-87-5 HCAPLUS

CN Nickel, diaquabis[1-[1-(hydroxy-κO)-2-naphthalenyl]-3-(4-methoxyphenyl)-2-propen-1-onato-κO]-(9CI) (CA INDEX NAME)



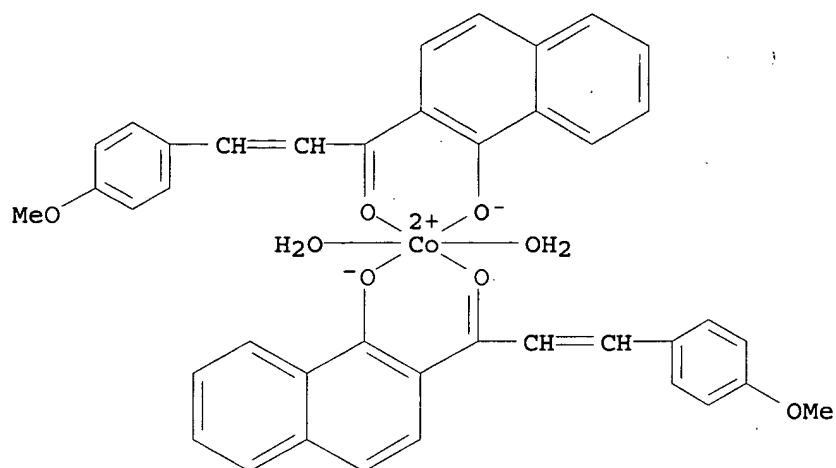
RN 116483-94-4 HCAPLUS

CN Cobalt, diaquabis[3-(4-chlorophenyl)-1-(1-hydroxy-2-naphthalenyl)-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)



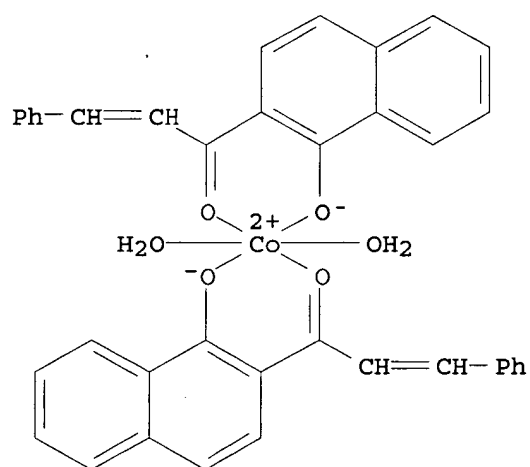
RN 116483-95-5 HCAPLUS

CN Cobalt, diaquabis[1-(1-hydroxy-2-naphthalenyl)-3-(4-methoxyphenyl)-2-propen-1-onato-O1,O1']- (9CI) (CA INDEX NAME)



RN 116523-46-7 HCAPLUS

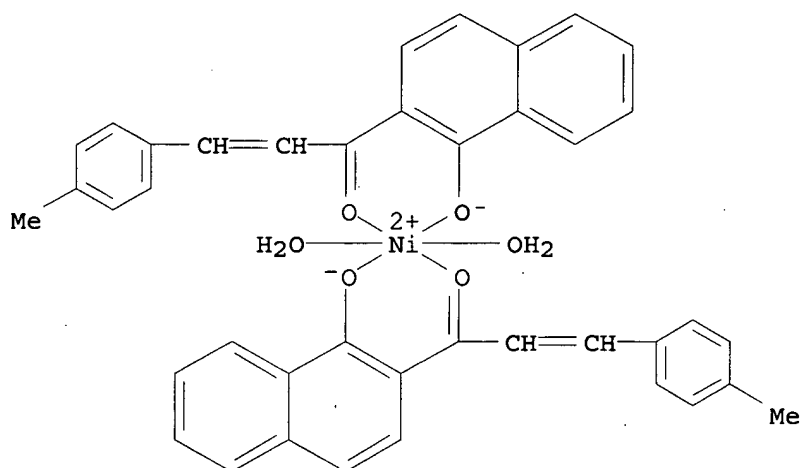
CN Cobalt, diaquabis[1-(1-hydroxy-2-naphthalenyl)-3-phenyl-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)



IT 116483-85-3P 116483-93-3P
(preparation of)

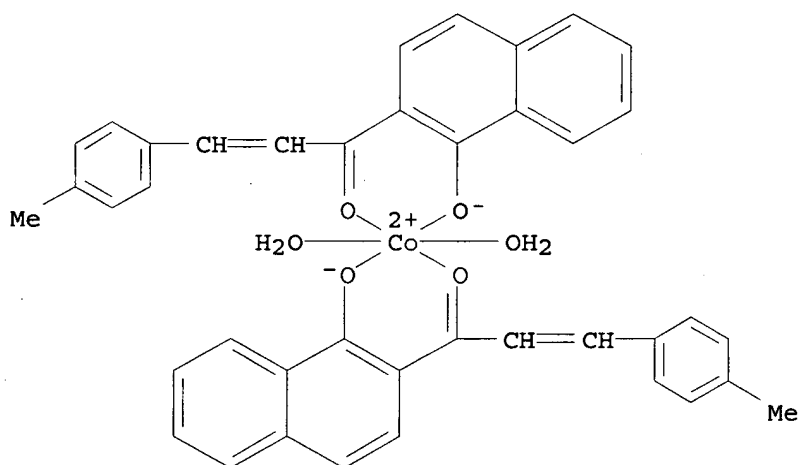
RN 116483-85-3 HCAPLUS

CN Nickel, diaquabis[1-(1-hydroxy-2-naphthalenyl)-3-(4-methylphenyl)-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)



RN 116483-93-3 HCAPLUS

CN Cobalt, diaquabis[1-(1-hydroxy-2-naphthalenyl)-3-(4-methylphenyl)-2-propen-1-onato-O,O']- (9CI) (CA INDEX NAME)



CC 78-7 (Inorganic Chemicals and Reactions)

IT 116483-84-2P 116483-86-4P 116483-87-5P

116483-94-4P 116483-95-5P 116523-46-7P

(preparation and thermal dehydration of)

IT 116483-77-3P 116483-78-4P 116483-79-5P 116483-80-8P

116483-85-3P 116483-88-6P 116483-89-7P 116483-90-0P

116483-93-3P 116483-96-6P 116483-97-7P 116523-47-8P

(preparation of)

L39 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1987:578183 HCAPLUS

DOCUMENT NUMBER: 107:178183

TITLE: Anticorrosive coatings for roughly polished metal surfaces

INVENTOR(S): Nishimoto, Satoru

PATENT ASSIGNEE(S): Mitsui Engineering and Shipbuilding Co., Ltd.,

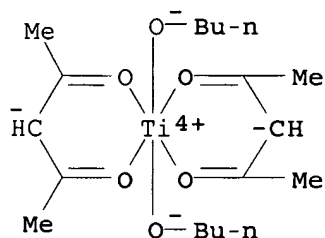
Japan; Kansai Paint Co., Ltd.; Kawasaki Heavy Industries, Ltd.; Hitachi Shipbuilding and Engineering Co., Ltd.; Mitsubishi Heavy Industries, Ltd.
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62095363	A2	19870501	JP 1985-236864	1985 1022
JP 63011382	B4	19880314	JP 1985-236864	1985 1022

PRIORITY APPLN. INFO.: JP 1985-236864

AB Roughly-polished metals are coated with compns. containing 100 parts epoxy resin (semi)drying oil fatty acid esters, 0.1-30 aprts epoxide-phosphoric acid adducts, and 0.1-30 parts complexes of Al, Ti, or Zr and cured at room temperature to form anticorrosive coatings with excellent topcoat receptance. Thus, a composition of Epikote 1004-linseed oil fatty acid adduct 100, Epikote 1001-coconut oil fatty acid-H₃PO₄ (1:1:1 mol) adduct 5, Ti(OBu)₄-MeCOCH₂COMe (1:2 mol) adduct 2, red iron oxide 35, talc 150, naphthenate salts 10, and xylene 148 parts was coated on a rusted steel plate and dried to give a coating showing no blisters or rust after soaking in H₂O for 3 days and excellent salt water resistance and weather resistance.

IT 16902-59-3
 (catalyst, for anticorrosive epoxy resin coatings, for rusted metals)
 RN 16902-59-3 HCAPLUS
 CN Titanium, dibutoxybis(2,4-pentanedionato-κO,κO')-(9CI) (CA INDEX NAME)

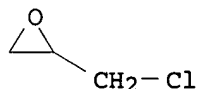


IT 25068-38-6D, Epikote 1004, esters with linseed oil fatty acids
 (coatings, containing epoxy phosphate derivs. and metal complexes, anticorrosive, for rusted metals)
 RN 25068-38-6 HCAPLUS
 CN Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 106-89-8

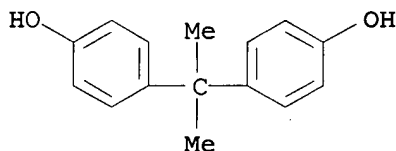
CMF C3 H5 Cl O



CM 2

CRN 80-05-7

CMF C15 H16 O2



(epoxy resin ester coatings contg., anticorrosive, for rusted metals)

IC ICM C09D005-08

ICS C09D003-58

CC 42-9 (Coatings, Inks, and Related Products)

IT 16902-59-3

(catalyst, for anticorrosive epoxy resin coatings, for rusted metals)

IT 25068-38-6D, Epikote 1004, esters with linseed oil fatty acids 37348-52-0D, DEN 431, esters with soybean oil fatty acids

61991-40-0D, Epiclon 1030, esters with tung oil fatty acids

(coatings, containing epoxy phosphate derivs. and metal complexes, anticorrosive, for rusted metals)

IT 1623-15-0D, reaction products with epoxy resins 7664-38-2D, Phosphoric acid, adducts with epoxy resins and coconut oil fatty acids

25068-38-6D, reaction products with monobutyl

phosphate and epoxy resin-fatty acid esters

(epoxy resin ester coatings containing, anticorrosive, for rusted metals)

L39 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1984:573204 HCAPLUS

DOCUMENT NUMBER: 101:173204

TITLE: Multilayer coating process

PATENT ASSIGNEE(S): Kansai Paint Co., Ltd., Japan

SOURCE: Jpn. Tokkyo Koho, 24 pp.

CODEN: JAXXAD

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 59020391

B4

19840512

JP 1979-66834

1979

0531

PRIORITY APPLN. INFO.:

JP 1979-66834

1979

0531

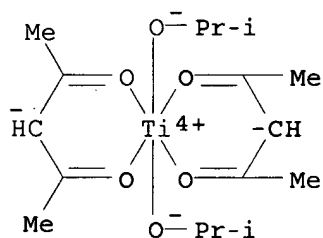
AB Substrates are undercoated with acrylic copolymers containing metal coordination compds., coated wet-on-wet with low-temperature-baking high-solids compns., and heated to form coatings. Thus, 60:30:10 Bu acrylate-2-hydroxyethyl acrylate-styrene copolymer (I) [26587-25-7] 80, Ti oxide 230, MEK 8, xylene 1,, and a dispersant 2.0 parts were pebble milled, mixed with 18 parts I, milled, mixed with I 333, MEK 30, xylene 76, 80% (solids) HCHO-melamine resin 106, and an acid catalyst (prepared from BuOH 60, p-toluenesulfonic acid [104-15-4] 20, Epiol B [25610-58-6] 20 parts) 61 parts to prepare a topcoat. A 1:28.3:48.3:22.4 acrylic acid-Bu acrylate-Bu methacrylate-2-hydroxyethyl methacrylate copolymer [85284-03-3] 100, BuOH 30, and tetrakis(acetyl acetone) zirconate [17501-44-9] 30 parts were mixed, thinned with 1:1 xylene-BuOH, sprayed on **polished** soft steel, coated with the above topcoat (thinned with toluene), and baked 30 min at 80° to form a coating having 60° glass 94, pencil hardness HB, good resistance to gasoline, toluene, water, and weather, gel fractions 96%, and elongation 73%.

IT 17927-72-9

(crosslinking agents, for undercoats containing acrylic polymers, on steel)

RN 17927-72-9 HCAPLUS

CN Titanium, bis(2,4-pentanedionato-κO,κO')bis(2-propanolato)- (9CI) (CA INDEX NAME)



IT 25610-58-6

(masking agents, for toluenesulfonic acid, for crosslinking catalysts for topcoats containing acrylic polymers and melamine resins)

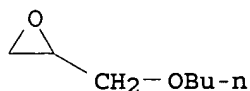
RN 25610-58-6 HCAPLUS

CN Oxirane, (butoxymethyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 2426-08-6

CMF C7 H14 O2



IC B05D001-36; B05D007-24
ICA C09D003-80
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55
IT 14782-75-3 17501-44-9 17927-72-9
(crosslinking agents, for undercoats containing acrylic polymers,
on steel)
IT 25610-58-6
(masking agents, for toluenesulfonic acid, for crosslinking
catalysts for topcoats containing acrylic polymers and melamine
resins)

=> d l36 1-33 ibib abs hitstr hitind

L36 ANSWER 1 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:570241 HCAPLUS
DOCUMENT NUMBER: 143:107601
TITLE: Method and apparatus for minimizing
thickness-to-planarity and dishing
in CMP
INVENTOR(S): Ramarajan, Suresh
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005139292	A1	20050630	US 2003-750734	2003 1231
PRIORITY APPLN. INFO.: US 2003-750734				2003 1231

AB The present technique is directed toward the fabrication of integrated circuits and provides for the hardening (modification) of a metal layer surface of a semiconductor wafer to reduce the amount of material removed during chemical mech. planarization (CMP) of the metal layer. This hardening may be accomplished, for example, by oxidizing the metal surface and/or coating the metal surface with a polymer. In one implementation, a relatively thick and dense oxide layer is formed on the wafer metal surface prior to CMP, by injecting, for example, an oxidant, such as O or ozone, near the end of an annealing cycle. Such hardening of the surface beneficially protects recessed regions from CMP chemical

attack and **CMP** pad deformation, and thus reduces the thickness-to-**planarity**, dishing, and waste generation realized during **CMP**.

IC ICM C23C008-80
 INCL 148277000
 CC 76-2 (**E**lectric Phenomena)
 Section cross-reference(s): 48
 ST **metal** oxidn polymer coating **CMP** integrated circuit fabrication
 IT Polishing
 (chemical-mech.; method and apparatus for minimizing thickness-to-**planarity** and dishing of **metals** in **CMP** in integrated-circuit fabrication)
 IT Annealing
 Integrated **circuits**
 Oxidation
 Oxidizing agents
 Semiconductor device fabrication
 (method and apparatus for minimizing thickness-to-**planarity** and dishing of **metals** in **CMP** in integrated-circuit fabrication)
 IT **Metals**, processes
 (method and apparatus for minimizing thickness-to-**planarity** and dishing of **metals** in **CMP** in integrated-circuit fabrication)
 IT **Polymers**, processes
 (method and apparatus for minimizing thickness-to-**planarity** and dishing of **metals** in **CMP** in integrated-circuit fabrication)
 IT 7782-44-7, Oxygen, processes 10028-15-6, Ozone, processes
 (method and apparatus for minimizing thickness-to-**planarity** and dishing of **metals** in **CMP** in integrated-circuit fabrication)
 IT 7440-33-7, Tungsten, processes 7440-50-8, Copper, processes
 (method and apparatus for minimizing thickness-to-**planarity** and dishing of **metals** in **CMP** in integrated-circuit fabrication)
 IT 1314-35-8P, Tungsten oxide (WO₃), preparation 1344-70-3P, Copper oxide
 (method and apparatus for minimizing thickness-to-**planarity** and dishing of **metals** in **CMP** in integrated-circuit fabrication)

L36 ANSWER 2 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:426106 HCAPLUS
 DOCUMENT NUMBER: 142:474105
 TITLE: **CMP** compositions and methods for polishing copper
 INVENTOR(S): Thomas, Terence M.; So, Joseph K.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 6 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005104048	A1	20050519	US 2003-712446	2003 1113
EP 1533352	A1	20050525	EP 2004-256808	2004 1104
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR, IS, YU				
CN 1629238	A	20050622	CN 2004-10092968	2004 1112
JP 2005191544	A2	20050714	JP 2004-330000	2004 1115
PRIORITY APPLN. INFO.:			US 2003-712446	A 2003 1113

AB The aqueous composition useful for polishing Cu on a semiconductor **wafer** comprises oxidizer 1-15, nonferrous **metal** inhibitor 0.1-1, nonferrous **metal** complexing agent 0.05-3, carboxylic acid polymer 0.01-5, modified cellulose 0.01-5, salts 0.0001-2 weight%, and balance water, wherein the salt reduces noise level from vibration between the **wafer** and a polishing **pad**.

IC ICM H01C001-00
ICS H01B001-02

INCL 252515000

CC 76-3 (**Electric** Phenomena)

ST copper **CMP** compn oxidizer nonferrous **metal** inhibitor complexing agent; carboxylic acid polymer cellulose salt water copper polishing **CMP**

IT Oxidizing agents
(**CMP** abrasive composition; **CMP** compns. and methods for polishing copper)

IT Vibration
(**CMP** compns. and methods for polishing copper)

IT Polishing
(chemical-mech.; **CMP** compns. and methods for polishing copper)

IT Abrasives
(composition for **CMP** of copper; **CMP** compns. and methods for polishing copper)

IT Semiconductor **materials**
(copper on, polishing of; **CMP** compns. and methods for polishing copper)

IT Carboxylic acids, uses
(**polymer** containing; **CMP** compns. and methods for polishing copper)

IT 7440-50-8, Copper, processes
(**CMP** polishing of, on semiconductor; **CMP** compns. and methods for polishing copper)

IT 9004-34-6, Cellulose, uses
(modified, **CMP** abrasive composition; **CMP** compns. and methods for polishing copper)

IT 50-01-1, Guanidine hydrochloride 506-93-4, Guanidine nitrate 594-14-9, Guanidine sulfate 7447-40-7, Potassium chloride (KCl), uses 7757-79-1, Potassium nitrate, uses 100224-74-6, Guanidine carbonate

(noise-reducing abrasive composition; **CMP** compns. and methods for polishing copper)
 IT 7697-37-2, Nitric acid, uses
 (pH adjusting agent; **CMP** compns. and methods for polishing copper)

L36 ANSWER 3 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:254438 HCAPLUS
 DOCUMENT NUMBER: 142:327461
 TITLE: Method of forming a selective barrier layer using a sacrificial layer
 INVENTOR(S): Adem, Ercan; Sanchez, John E.; Erb, Darrell M.; Pangrle, Suzette K.
 PATENT ASSIGNEE(S): Advanced Micro Devices, Inc., USA
 SOURCE: U.S., 11 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 6869878	B1	20050322	US 2003-367406	2003 0214
PRIORITY APPLN. INFO.: US 2003-367406				2003 0214

AB The reliability and performance of **planarized metalization** patterns in an elec. device, for example Cu, inlaid in the surface of a layer of dielec. **material** overlying a semiconductor **wafer** substrate, are enhanced by a method for reliably depositing a barrier layer selective to the **metalization** patterns. The method comprises forming a sacrificial dielec. layer above a substrate. **Metalization** patterns are formed in the sacrificial dielec. layer. The barrier layer is selectively deposited on the **metalization** patterns. Portions of the barrier **material** undesirably deposited on the sacrificial dielec. layer are removed by removing the sacrificial dielec. layer, thus preventing bridging of adjacent **metalization** features by the barrier layer portions. An interlevel dielec. layer is then formed in place of the sacrificial dielec. layer. The selectively deposited barrier layer advantageously reduces parasitic capacitance between **metalization** features in comparison to a conventional blanket-deposited Si nitride barrier layer.

IC ICM H01L021-4763
 ICS H01L021-44
 INCL 438687000; 438624000; 438627000; 438635000; 438637000; 438643000; 438675000

CC 76-3 (**Electric Phenomena**)
 ST selective barrier layer formation **planarized metalization** pattern elec device

IT Polishing
 (chemical-mech.; method of forming selective barrier layer using sacrificial layer including step of **planarizing** conductive layer by)

IT Integrated **circuits**
 (method of forming selective barrier layer using sacrificial layer for fabrication of elec. devices)

IT Polyalkenamers
 Polycarbonates, uses
Polymers, uses
 (sacrificial layer; method of forming selective barrier layer using sacrificial layer)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 4 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:247735 HCAPLUS

DOCUMENT NUMBER: 143:51664

TITLE: Study of ALD and CVD **metalization** compatibility with ULK using a post-integration porogen removal approach

AUTHOR(S): Maitrejean, S.; Jousseau, V.; Trouve, H.; Gallagher, M.; Fayolle, M.; Le Cornec, C.; Morel, T.; Haumesser, P. H.; Minoret, S.; Zenasni, A.; Ciaramella, F.; Prokopowicz, G.; Zhen, H.; Calvert, J.

CORPORATE SOURCE: CEA-LETI, Grenoble, F38054/9, Fr.

SOURCE: Advanced Metallization Conference 2004, Proceedings of the Conference, San Diego, CA, United States, Oct. 19-21, and Tokyo, Japan, Sept. 28-29, 2004 (2005), Meeting Date 2004, 83-88. Editor(s): Erb, Darrell. Materials Research Society: Warrendale, Pa. CODEN: 69GQSV; ISBN: 1-55899-814-4

DOCUMENT TYPE: Conference

LANGUAGE: English

AB The reduction of RC time delay and cross talk in ULSI **circuit** interconnects requires the use of porous dielec. with ultra low dielec. constant (ULK). Porosity results in numerous integration challenges including Cu barrier diffusion inside the dielec. To face these issues, a post-integration porogen removal approach was proposed: the porous dielec. **material** is integrated through Chemical Mech. Polishing (CMP) as a dense well dispersed porogen polymer - MethylSilsesQuioxane (MSQ) matrix composite. This approach was tested with respect to compatibility with **metalorg.** chemical vapor deposition (MOCVD) and **metalorg.** atomic layer deposition (MOALD) **metal** barrier process. Composite thermal stability was experienced with success up to 380° barrier deposition temperature Concerning MOALD compatibility, MOALD TiN was deposited with good uniformity. Finally, one great advantage of post integration porogen removal approach was demonstrated: no barrier diffusion inside the ULK is detected on full sheet and patterned **wafer**.

CC 76-9 (**Electric** Phenomena)

ST. post integration porogen removal ultra low dielec const; atomic layer chem vapor deposition **metalization** compatibility

IT Silsesquioxanes
 (Me; post-integration porogen removal approach test with respect to compatibility with **metalorg.** chemical vapor and **metalorg.** atomic layer deposition of **metal** barrier)

IT Polishing
 (chemical-mech.; **metalorg.** chemical vapor and atomic layer

- deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT Coating process
(**metalorg.** chemical vapor and atomic layer deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT Atomic layer epitaxy
Dielectric constant
Interconnections, electric
Porogens
Rutherford backscattering spectroscopy
Semiconductor **materials**
Thermal stability
(**metalorg.** chemical vapor and atomic layer deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT **Polymers**, uses
(**metalorg.** chemical vapor and atomic layer deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT Vapor deposition process
(**metalorg.**; **metalorg.** chemical vapor and atomic layer deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT Integrated **circuits**
(ultra large-scale; **metalorg.** chemical vapor and atomic layer deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT 7727-37-9, Nitrogen, reactions
(annealing, post-integration porogen removal approach test with respect to compatibility with **metalorg.** chemical vapor and **metalorg.** atomic layer deposition of **metal** barrier)
- IT 7440-21-3, Silicon, uses
(**metalorg.** chemical vapor and atomic layer deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT 853733-77-4, Zirkon LK-ILD
(**metalorg.** chemical vapor and atomic layer deposition compatibility with ultra low dielec. constant using post-integration porogen removal approach)
- IT 25583-20-4, Titanium nitride (TiN)
(post-integration porogen removal approach test with respect to compatibility with **metalorg.** chemical vapor and **metalorg.** atomic layer deposition of **metal** barrier)
- IT 7664-41-7, Ammonia, reactions
(treatment effect, post-integration porogen removal approach test with respect to compatibility with **metalorg.** chemical vapor and **metalorg.** atomic layer deposition of **metal** barrier)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 5 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:995561 HCAPLUS
DOCUMENT NUMBER: 141:419166
TITLE: Slurry system with polymeric particles for polishing of semiconductor **wafers**

INVENTOR(S): Lee, Shen-Nan; Chen, Ying-Ho; Jang, Syun-Ming;
 Chou, Tzu-Jen
 PATENT ASSIGNEE(S): Taiwan Semiconductor Manufacturing Co., Ltd.,
 Taiwan
 SOURCE: U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004226918	A1	20041118	US 2003-423569	2003 0424
PRIORITY APPLN. INFO.:			US 2003-423569	2003 0424

AB A slurry system for a chemical mech. polishing (CMP) process and a method for using the same wherein the slurry system includes an aqueous dispersion comprising at least abrasive polymer containing particles in an alkaline solution having a pH of .ltorsim.9.5; and wherein the method includes providing a semiconductor wafer process surface including a oxide containing material and metal filled semiconductor features; providing the system; and, polishing in a CMP process the semiconductor wafer process surface using the slurry system to remove at least a portion of the oxide containing material and the metal comprising the metal filled semiconductor features.

IC ICM C23F001-00

INCL 216089000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 38, 48, 66

ST polymer slurry CMP semiconductor device fabrication

IT Polishing

(chemical-mech.; slurry system with abrasive polymeric particles for CMP of semiconductor wafers)

IT Polysiloxanes, uses

(fluoro, fluorosilicones; slurry system with abrasive polymeric particles for CMP of semiconductor wafers)

IT Detergents

Surfactants

(in slurry system with abrasive polymeric particles for CMP of semiconductor wafers)

IT Fatty acids, uses

Soaps

(in slurry system with abrasive polymeric particles for CMP of semiconductor wafers)

IT Acetals

(polymers; slurry system with abrasive polymeric particles for CMP of semiconductor wafers)

IT Fatty acids, uses

(salts; in slurry system with abrasive polymeric particles for CMP of semiconductor wafers)

IT Abrasives
Semiconductor device fabrication
Slurries
(slurry system with abrasive **polymeric** particles for
CMP of semiconductor **wafers**)

IT Acrylic **polymers**, uses
Epoxy resins, uses
Fluoropolymers, uses
Neoprene rubber, uses
Phenolic resins, uses
Polyamides, uses
Polyesters, uses
Polyimides, uses
Polymers, uses
Polysiloxanes, uses
Polysulfones, uses
Polyureas
Polyurethanes, uses
(slurry system with abrasive **polymeric** particles for
CMP of semiconductor **wafers**)

IT **Metals**, processes
Oxides (inorganic), processes
(slurry system with abrasive **polymeric** particles for
CMP of semiconductor **wafers** with)

IT 75-59-2, Tetramethylammonium hydroxide 1336-21-6, Ammonium
hydroxide 7664-41-7, Ammonia, uses
(in slurry system with abrasive **polymeric** particles
for **CMP** of semiconductor **wafers**)

IT 9010-98-4
(neoprene rubber; slurry system with abrasive **polymeric**
particles for **CMP** of semiconductor **wafers**)

IT 108-78-1D, Melamine, **polymer** derivs. 9003-07-0,
Polypropylene
(slurry system with abrasive **polymeric** particles for
CMP of semiconductor **wafers**)

L36 ANSWER 6 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:877987 HCAPLUS

DOCUMENT NUMBER: 141:373687

TITLE: Polishing pad with window for
planarization of microelectronic
devices

INVENTOR(S): Swisher, Robert G.; Wang, Alan E.; Allison,
William C.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004209066	A1	20041021	US 2003-417738	2003 0417
EP 1615749	A1	20060118	EP 2004-759773	2004

0329

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,
EE, HU, PL, SK

PRIORITY APPLN. INFO.:

US 2003-417738

A

2003

0417

WO 2004-US9563

W

2004

0329

AB The present invention relates to a polishing pad that includes a window area; the window area can be formed in the pad using a cast-in-place process. The polishing pad may comprise a first layer of a particulate polymer in an organic polymer binder and a second layer made of a non-compressible polymer and/or metallic film or foil. An optional third layer is more compressible and may comprise an impregnated woven or nonwoven fiber mat. The window comprises a resin material. The polishing pad of the present invention can be useful for polishing articles and can be especially useful for chemical mech. polishing or planarization of a microelectronic device, such as a semiconductor wafer. The window area of the polishing pad of the present invention can be particularly useful for polishing or planarizing tools that are equipped with through-the-platen wafer metrol.

IC ICM B32B003-00

INCL 428313500

CC 76-3 (Electric Phenomena)

ST polishing pad planarization window

IT Polishing

(chemical-mech., pads; polishing pad with window for planarization of microelectronic devices)

IT Polyurethanes, uses

(crosslinked, particles and binders; polishing pad with window for planarization of microelectronic devices)

IT Microelectronic devices

(polishing pad with window for planarization of microelectronic devices)

IT Acrylic polymers, uses

Epoxy resins, uses

(window resins; polishing pad with window for planarization of microelectronic devices)

IT 778596-03-5P

(first layer binder; polishing pad with window for planarization of microelectronic devices)

IT 778596-01-3P

(first layer particles; polishing pad with window for planarization of microelectronic devices)

IT 404872-65-7P, EPON 880-VERSAMID 253 copolymer 778596-05-7P

778596-07-9P, EBECRYL 8404-EBECRYL 4866 copolymer

(window resin; polishing pad with window for planarization of microelectronic devices)

L36 ANSWER 7 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:857139 HCAPLUS

DOCUMENT NUMBER: 141:359263

TITLE: Chemical-mechanical polishing compositions comprising particles having polymeric cores and inorganic surfaces and method of using same

INVENTOR(S): Smith, Dennis E.; Babu, Suryadevara V.

PATENT ASSIGNEE(S): Eastman Kodak Company, USA

SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004203324	A1	20041014	US 2003-411735	2003 0411
US 6918820	B2	20050719		
WO 2004092298	A2	20041028	WO 2004-US9200	2004 0326
WO 2004092298	A3	20041209		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2003-411735 A 2003
0411

AB This invention relates generally to compns. and methods for removing adherent **materials** and polishing surfaces by chemical-mech. polishing (**CMP**). In one embodiment, the method employs an improved media comprising core-shell particles. The media can be applied to microelectronic objects of manufacture

IC ICM B24B001-00

INCL 451041000

CC 76-3 (**Electric** Phenomena)

ST chem mech polishing compn polymer core inorg surface particle;
CMP compn polymer core inorg surface particle

IT Integrated **circuits**
(chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)

IT Fluoropolymers, uses
(chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)

IT Polishing
(chemical-mech., compns. for; chemical-mech. polishing compns. comprising particles having **polymeric** cores and

- inorg. surfaces and method of using same)
- IT Chelating agents
- Oxidizing agents
- Stabilizing agents
- Surfactants
 - (compns. containing; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT pH
 - (control agent of, compns. containing; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT Particles
 - (core-shell; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT Polyesters, uses
 - Polymers**, uses
 - (cores, of particles; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT Acrylic **polymers**, uses
 - Polyamides, uses
 - Polycarbonates, uses
 - (cores, of particles; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT Etching
 - (inhibitor, compns. containing; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT Peroxides, reactions
 - (oxidizers; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT Polyurethanes, uses
 - (**pad**; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT Abrasives
 - (particles, core-shell; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT Electric insulators
 - (polishing of; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT **Metals**, processes
 - (polishing of; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT Slurries
 - (polishing; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT Inorganic compounds
 - (shells, of particles; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT Semiconductor **materials**

- (**wafers**; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT 64-18-6, Formic acid, properties 64-19-7, Acetic acid, properties 65-85-0, Benzoic acid, properties 110-15-6, Succinic acid, properties 141-82-2, Malonic acid, properties 144-62-7, Oxalic acid, properties
(compns. containing; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT 9002-84-0, Polytetrafluoroethylene 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9002-89-5, Polyvinyl alcohol 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-42-3, Polyethylmethacrylate 9003-53-6, Polystyrene 9008-66-6, Polyhexamethylene sebacamide 9010-86-0, Ethylene-ethyl acrylate copolymer 9011-14-7, Polymethylmethacrylate 24937-79-9, Polyvinylidene fluoride 24968-12-5, Polybutylene terephthalate 25034-86-0, Styrene-methylmethacrylate copolymer 25038-54-4, Polycaprolactam, uses 25038-59-9, uses 26182-43-4, Ethylene-ethyl methacrylate copolymer 32131-17-2, Polyhexamethylene adipamide, uses
(cores, of particles; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT 77-92-9, Citric acid, reactions
(oxidizer; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT 409-21-2, Silicon carbide, uses 1306-38-3, Ceria, uses 1313-99-1, Nickel oxide, uses 1314-23-4, Zirconia, uses 1314-35-8, Tungsten oxide, uses 1314-36-9, Yttria, uses 1332-29-2, Tin oxide 1332-37-2, Iron oxide, uses 1344-28-1, Alumina, uses 1344-70-3, Copper oxide 11129-60-5, Manganese oxide 12070-08-5, Titanium carbide 13463-67-7, Titania, uses
(particles containing; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes 7631-86-9, Silicon oxide, processes 12033-89-5, Silicon nitride, processes
(polishing of; chemical-mech. polishing compns. comprising particles having **polymeric** cores and inorg. surfaces and method of using same)
- IT 7429-90-5, Aluminum, processes
(polishing of; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)
- IT 1310-58-3, Potassium hydroxide, properties 1310-73-2, Sodium hydroxide, properties 1336-21-6, Ammonium hydroxide ((NH₄)(OH))
(softening agent; chemical-mech. polishing compns. comprising **polymeric** cores having inorg. surface particles and method of use)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 8 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:515770 HCAPLUS

DOCUMENT NUMBER: 141:63399

TITLE: Method using multi-component colloidal

abrasives for **CMP** processing of
semiconductor and optical **materials**
INVENTOR(S): Bellman, Robert A.; Sabia, Robert; Ukrainczyk,
Ljerka; Whalen, Joseph M.
PATENT ASSIGNEE(S): Corning Incorporated, USA
SOURCE: PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004053456	A2	20040624	WO 2003-US37844	2003 1125
WO 2004053456	A3	20050113		
W: IL, JP, KR				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
US 2004132306	A1	20040708	US 2003-722769	2003 1126
PRIORITY APPLN. INFO.:			US 2002-432076P	P 2002 1209

AB A method is provided for using abrasive colloidal particles having multi-component composition comprising mixed (1) **metal** or **metalloid** oxides, (2) oxyfluorides, or (3) oxynitrides, each grouping (1, 2, or 3) individually alone or in combination thereof, in a chemical-mech. manufacturing process for **planarizing** or polishing **metal**, semiconductor, dielec., glass, polymer, optical, and ceramic **materials**. The particles exhibit a modified surface chemical performance and have an isoelec. point (pHIEP) greater than the pH of the dispersed particles in solution, and with a stabilized particle dispersion at pH values of interest for **CMP** operations. The composition of the multi-component particles may be adjusted as desired, in regard to their chemical or phys. properties such as surface chemical, hardness, solubility, or degree of compatibility with the workpiece **material** being **planarized** or polished. Also provided is a **chemical-mech. planarization** slurry mixture incorporating such multi-component particles and with a solution chemical that enhances the **CMP** effects by in-part adjusting the pH of the solution away from the pHIEP of the media to maximize dispersion.

IC ICM G01N

CC 76-3 (**Electric** Phenomena)

Section cross-reference(s): 48, 57, 66

ST abrasive slurry **CMP** optical semiconductor **material**

IT Polishing

(chemical-mech.; multi-component colloidal abrasives for **CMP** processing of semiconductor and optical **materials**)

IT Abrasives
Ceramics

Electric insulators
 Integrated **circuits**
 Optical **materials**
 Semiconductor **materials**
 Slurries
 (multi-component colloidal abrasives for **CMP**
 processing of semiconductor and optical **materials**)

IT Glass, uses
 Polymers, uses
 (multi-component colloidal abrasives for **CMP**
 processing of semiconductor and optical **materials**)

IT Alkali **metal** pnictides
 Alkaline earth pnictides
 (nitrides, slurry component; multi-component colloidal
 abrasives for **CMP** processing of semiconductor and
 optical **materials**)

IT Fluorides, uses
 (oxyfluorides, slurry component; multi-component colloidal
 abrasives for **CMP** processing of semiconductor and
 optical **materials**)

IT Rare earth pnictides
 (rare earth nitrides, slurry component; multi-component
 colloidal abrasives for **CMP** processing of
 semiconductor and optical **materials**)

IT Alkali **metal** oxides
 Alkaline earth oxides
 Oxides (inorganic), uses
 Oxynitrides
 Rare earth oxides
 Transition **metal** nitrides
 Transition **metal** oxides
 (slurry component; multi-component colloidal abrasives for
 CMP processing of semiconductor and optical
 materials)

IT 7782-41-4, Fluorine, uses
 (slurry component; multi-component colloidal abrasives for
 CMP processing of semiconductor and optical
 materials)

IT 1303-86-2, Boron oxide (B₂O₃), uses 1304-28-5, Barium oxide
 (BaO), uses 1304-56-9, Beryllium oxide (BeO), uses 1305-78-8,
 Calcium oxide (CaO), uses 1306-38-3, Cerium oxide (CeO₂), uses
 1309-48-4, Magnesium oxide (MgO), uses 1309-60-0, Lead oxide
 (PbO₂) 1309-64-4, Antimony oxide (Sb₂O₃), uses 1310-53-8,
 Germanium oxide (GeO₂), uses 1313-59-3, Sodium oxide (Na₂O),
 uses 1314-11-0, Strontium oxide (SrO), uses 1314-23-4,
 Zirconium oxide (ZrO₂), uses 1314-56-3, Phosphorus oxide (P₂O₅),
 uses 1314-61-0, Tantalum oxide (Ta₂O₅) 1317-38-0, Cupric
 oxide, uses 1344-28-1, Alumina, uses 12019-06-6, Copper oxide
 (CuO₂) 12057-24-8, Lithium oxide (Li₂O), uses 12136-45-7,
 Potassium oxide (K₂O), uses 12786-74-2, Antimony oxide (SbO₂)
 13463-67-7, Titanium oxide (TiO₂), uses 20281-00-9, Cesium oxide
 (Cs₂O) 51184-13-5, Aluminum silicon nitride oxide
 (slurry component; multi-component colloidal abrasives for
 CMP processing of semiconductor and optical
 materials)

L36 ANSWER 9 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:100731 HCAPLUS

DOCUMENT NUMBER: 140:155846

TITLE: Method for the chemical-mechanical polishing

INVENTOR(S): of **metal** interconnects
 Bian, Jinru; Ghosh, Tirthankar; Thomas,
 Terence M.
 PATENT ASSIGNEE(S): Rohn and Haas Electronic Materials CMP
 Holdings, Inc., USA
 SOURCE: U.S. Pat. Appl. Publ., 5 pp., Cont.-in-part of
 U.S. Ser. No. 43,664.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2004023492	A1	20040205	US 2003-402168	2003 0328
US 6936541	B2	20050830		
US 2002062600	A1	20020530	US 2001-925210	2001 0809
US 2002042199	A1	20020411	US 2001-956680	2001 0920
US 2002106897	A1	20020808	US 2001-43664	2001 1026
US 6605537	B2	20030812	US 2000-233818P	P 2000 0920
			US 2000-243973P	P 2000 1027
			US 2001-956680	B2 2001 0920
			US 2001-43664	A2 2001 1026
			US 2000-224686P	P 2000 0811

AB The invention relates to a method for the chemical-mech. polishing (CMP) of **metal** interconnects, where the polishing rate is increased and the dishing is reduced. The method consists of the steps of (i) polishing the semiconductor **wafer** with a polishing solution and a polishing pad to **planarize** the **metal** interconnects, the **metal** interconnects being a nonferrous **metal** selected from the group consisting of copper, copper-base alloys, silver, and silver-base alloys, and the polishing solution having by weight percent, 0.15-5 benzotriazole, 0-1 abrasive, 0-10 polymeric

particles, 0-5 polymer-coated particles, and balance water at a pH of <5 and a removal rate-pressure sensitivity of ≥ 750 /min/psi; (ii) accelerating removal of projecting **metal** from the **metal** interconnects with the polishing **pad** providing a first pressure that increases removal rate of the projecting **metal**; and (iii) inhibiting removal of recessed **metal** from the **metal** interconnects with the polishing **pad** providing a second pressure that decreases removal of the recessed **metal** and wherein the accelerating and inhibiting steps occur in a simultaneous manner.

IC ICM H01L021-302
ICS H01L021-461
INCL 438689000
CC 76-14 (**E**lectric Phenomena)
ST chem mech polishing **metal** interconnection
IT Polishing
(apparatus, **pad**; method for chemical-mech. polishing of **metal** interconnects)
IT Polishing
(chemical-mech.; method for chemical-mech. polishing of **metal** interconnects)
IT Interconnections, electric
(method for chemical-mech. polishing of **metal** interconnects)
IT **Metals**, uses
(method for chemical-mech. polishing of **metal** interconnects)
IT **Polymers**, processes
(particles, polishing slurry containing; method for chemical-mech. polishing of **metal** interconnects)
IT Abrasives
Complexing agents
Oxidizing agents
(polishing slurry containing; method for chemical-mech. polishing of **metal** interconnects)
IT Particles
(**polymeric**, polishing slurry containing; method for chemical-mech. polishing of **metal** interconnects)
IT Copper alloy, base
Silver alloy, base
(elec. conductor; method for chemical-mech. polishing of **metal** interconnects)
IT 2682-20-4, Neolone M50
(biocide, polishing slurry containing; method for chemical-mech. polishing of **metal** interconnects)
IT 12125-02-9, Ammonium chloride, processes
(brightener, polishing slurry containing; method for chemical-mech. polishing of **metal** interconnects)
IT 7440-22-4, Silver, uses 7440-50-8, Copper, uses
(elec. conductor; method for chemical-mech. polishing of **metal** interconnects)
IT 7722-84-1, Hydrogen peroxide, processes
(oxidant; method for chemical-mech. polishing of **metal** interconnects)
IT 7697-37-2, Nitric acid, processes
(pH adjusted by; method for chemical-mech. polishing of **metal** interconnects)
IT 57-55-6, Propylene glycol, processes 95-14-7, 1H-Benzotriazole
6915-15-7, Malic acid 9003-01-4, Polyacrylic acid
(polishing slurry containing; method for chemical-mech. polishing of

metal interconnects)

L36 ANSWER 10 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:63020 HCAPLUS
 DOCUMENT NUMBER: 140:137759
 TITLE: Foamed polyurethane, polishing sheets and
pads, and manufacture of foamed
 polyurethane for **CMP** polishing of
 semiconductor **wafers**
 INVENTOR(S): Ogawa, Kazuyuki; Nakai, Yoshiyuki; Shimomura,
 Akio; Nakamori, Masahiko; Yamada, Takatoshi
 PATENT ASSIGNEE(S): Toyo Rubber Industry Co., Ltd., Japan; Toyobo
 Co., Ltd.
 SOURCE: Jpn. Tokkyo Koho, 10 pp.
 CODEN: JTXXFF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 3489828	B1	20040126	JP 2002-279363	2002 0925
JP 2004115617	A2	20040415		
PRIORITY APPLN. INFO.:			JP 2002-279363	2002 0925

AB The title manufacture of foamed polyurethane for **CMP**
 polishing **pads** and sheets involves mixing an isocyanate
 prepolymer 1st component and a chain-elongating agent 2nd
 component after filtering the 1st and 2nd component sep. through
 200-mesh non-metallic filters to sep. foreign matters.
 The filter **material** may be reformed PPE polymer or
 fluoropolymer which is thermal resistant.

IC ICM C08G018-09
 ICS B24B037-00; C08J005-14; H01L021-304; C08G101-00; C08L075-04

CC 76-14 (**Electric** Phenomena)
 Section cross-reference(s): 38, 48

ST polyurethane foam polishing sheet **pad** **CMP**
 semiconductor **wafer**; isocyanate prepolymer filtering PPE
 fluoropolymer filter

IT Polishing
 (chemical-mech., of semiconductor **wafers**, foamed
 polyurethane for; foamed polyurethane, polishing sheets and
pads, and manufacture of foamed polyurethane for **CMP**
 polishing of semiconductor **wafers**)

IT Fluoropolymers, properties
 (filtering **materials**; foamed polyurethane, polishing
 sheets and **pads**, and manufacture of foamed polyurethane
 for **CMP** polishing of semiconductor **wafers**)

IT Polyurethanes, properties
 (foamed, for polishing sheets and **pads**; foamed
 polyurethane, polishing sheets and **pads**, and manufacture
 of foamed polyurethane for **CMP** polishing of
 semiconductor **wafers**)

IT Urethane rubber, reactions

(polyether-, Adiprene L 325; foamed polyurethane, polishing sheets and **pads**, and manufacture of foamed polyurethane for **CMP** polishing of semiconductor **wafers**)

IT Polysiloxanes, uses
(polyoxyethylene-polyoxypropylene-, SH 192, nonionic surfactant; foamed polyurethane, polishing sheets and **pads**, and manufacture of foamed polyurethane for **CMP** polishing of semiconductor **wafers**)

IT Isocyanates
(prepolymers, reactant for foamed polyurethane; foamed polyurethane, polishing sheets and **pads**, and manufacture of foamed polyurethane for **CMP** polishing of semiconductor **wafers**)

IT Filters
(reformed PPE **polymer** or fluoropolymer; foamed polyurethane, polishing sheets and **pads**, and manufacture of foamed polyurethane for **CMP** polishing of semiconductor **wafers**)

IT 101-14-4, Ihara Cuamine MT
(Cuamine MT, filtered monomer; foamed polyurethane, polishing sheets and **pads**, and manufacture of foamed polyurethane for **CMP** polishing of semiconductor **wafers**)

IT 9041-80-9, Polyphenylene ether
(filtering **materials**; foamed polyurethane, polishing sheets and **pads**, and manufacture of foamed polyurethane for **CMP** polishing of semiconductor **wafers**)

L36 ANSWER 11 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:1004353 HCAPLUS
 DOCUMENT NUMBER: 140:11376
 TITLE: Conductive polishing article for electrochemical mechanical polishing
 INVENTOR(S): Chen, Liang-Yuh; Wang, Yuchun; Wang, Yan; Duboust, Alain; Carl, Daniel A.; Wadensweiler, Ralph; Birang, Manoocher; Butterfield, Paul D.; Mavliev, Rashid; Tsai, Stan D.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 32 pp., Cont.-in-part of U.S. Ser. No. 26,854.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 31
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2002119286	A1	20020829	US 2001-33732	2001 1227
US 2002102853	A1	20020801	US 2001-26854	2001 1220
WO 2002075804	A2	20020926	WO 2002-US4806	2002 0219
WO 2002075804	A3	20030626		
W: CN, JP, KR, SG				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,				

EP 1368826	MC, NL, PT, SE, TR A2	20031210	EP 2002-717453	2002 0219
CN 1531747	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR A	20040922	CN 2002-803505	2002 0219
JP 2005508074	T2	20050324	JP 2002-574121	2002 0219
JP 2004531885	T2	20041014	JP 2002-583133	2002 0219
US 2003220053	A1	20031127	US 2003-445239	2002 0410
US 6884153	B2	20050426		2003 0523
US 2004020789	A1	20040205	US 2003-455895	2003 0606
US 2004023610	A1	20040205	US 2003-455941	2003 0606
US 6991528	B2	20060131		2003 0626
US 2004134792	A1	20040715	US 2003-608513	2003 1223
US 2004163946	A1	20040826	US 2003-744904	2004 0630
US 2005000801	A1	20050106	US 2004-880752	2004 0720
US 2004266327	A1	20041230	US 2004-894756	2004 1025
US 6988942	B2	20060124		2004 1103
US 2005056537	A1	20050317	US 2004-972884	2005 0108
US 2005092621	A1	20050505	US 2004-980888	2005 0322
US 2005133363	A1	20050623	US 2005-31545	2005 0830
US 2005161341	A1	20050728	US 2005-87878	2005 0915
US 2005284770	A1	20051229	US 2005-215254	2000 0217
US 2006032749	A1	20060216	US 2005-228035	
PRIORITY APPLN. INFO.:			US 2000-505899	A2

US 2001-275874P	P	2001 0314
US 2001-286107P	P	2001 0424
US 2001-326263P	P	2001 1001
US 2001-26854	A2	2001 1220
US 2000-258162P	P	2000 1222
US 2001-33732	A2	2001 1227
US 2002-38066	A	2002 0103
WO 2002-US4806	W	2002 0219
WO 2002-US11009	W	2002 0410
US 2002-140010	A2	2002 0507
US 2002-151538	A2	2002 0516
US 2002-210972	A2	2002 0802
US 2002-211626	A2	2002 0802
US 2002-244688	A2	2002 0916
US 2002-244697	A2	2002 0916

US 2003-391324	A2	2003 0318
US 2003-455895	A2	2003 0606
US 2003-455941	A2	2003 0606
US 2003-608513	A2	2003 0626
US 2003-484189P	P	2003 0701
US 2003-642128	A2	2003 0815
US 2003-516680P	P	2003 1103
US 2003-727724	A2	2003 1203
US 2003-744904	A2	2003 1223
US 2004-579098P	P	2004 0611
US 2004-880752	A2	2004 0630
US 2004-610930P	P	2004 0918

AB An article of manufacture and apparatus are provided for **planarizing** a layer on a substrate using electrochem. deposition techniques, electrochem. dissoln. techniques, polishing techniques, and combinations thereof. In one aspect, an article of manufacture is provided for polishing a substrate including polishing article comprising a body having at least a partially conductive surface adapted to polish the substrate and a mounting surface. A plurality of perforations may be formed in the polishing article for flow of **material** therethrough. In another aspect, a polishing article for polishing a substrate includes a body having a polishing surface and a conductive element disposed therein.

The conductive element may have a contact surface that extends beyond a plane defined by the polishing surface. The polishing surface may have one or more pockets formed therein. The conductive element may be disposed in each of the polishing pockets. The invention is applicable to the formation of multilevel interconnects that lie at the heart of ultra large-scale integration (ULSI).

IC ICM B32B003-00
 INCL 428131000; 428209000; 428141000; 428174000
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 47
 ST electrochem mech polishing app **planarization**; app electrochem deposition dissoln polishing surface **planarization**
 IT Integrated **circuits**
 (ULSI; conductive polishing article for electrochem. mech. polishing)
 IT **Metals**, uses
Polymers, uses
 (conductive, as portion of substrate; conductive polishing article for electrochem. mech. polishing)
 IT **Polymers**, uses
 (filled, used in body of polishing article; conductive polishing article for electrochem. mech. polishing)
 IT **Polymers**, uses
 (foamed, used in body of polishing article; conductive polishing article for electrochem. mech. polishing)

L36 ANSWER 12 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:855611 HCAPLUS
 DOCUMENT NUMBER: 139:344305
 TITLE: Method of fabricating one or more tiers of an integrated **circuit**
 INVENTOR(S): Carter, Kenneth Raymond
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 2003203649	A1	20031030	US 2002-132530	2002 0424
US 6730617	B2	20040504		
PRIORITY APPLN. INFO.:			US 2002-132530	2002 0424

AB A process for forming a portion of an integrated **circuit** includes placing a layer of **material** on a substrate, in which the **material** includes a polymeric composition or a precursor to a dielec. composition. The **material** is contacted with a stamping surface having relief structures that define a pattern, so that a patterned layer is formed as a result of the contact, which may include heating the **material** to mold

it. A metal film or layer is then deposited onto the patterned layer. The metal can then be planarized to form a layer of an integrated circuit. A decomposable or sacrificial polymer is preferably included in the material, so that porous dielec. material is formed, thereby leading to a lower dielec. constant of the end product.

IC ICM H01L021-31
ICS H01L021-469
INCL 438780000; 438781000
CC 76-3 (Electric Phenomena)
ST polymer stamping semiconductor multilayer integrated circuit
IT Polishing
(chemical-mech.; polymer stamping process in fabrication of semiconductor multilayer integrated circuit)
IT Vapor deposition process
(chemical; polymer stamping process in fabrication of semiconductor multilayer integrated circuit)
IT Interconnections, electric
(multilayer; polymer stamping process in fabrication of semiconductor multilayer integrated circuit)
IT Integrated circuits
(polymer stamping process in fabrication of semiconductor multilayer integrated circuit)
IT Molding of plastics and rubbers
(stamping; polymer stamping process in fabrication of semiconductor multilayer integrated circuit)
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 13 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:648247 HCAPLUS
DOCUMENT NUMBER: 139:158464
TITLE: Method for curing spin-on dielectric films utilizing electron beam radiation in semiconductor device fabrication
INVENTOR(S): Livesay, William R.; Ross, Matthew F.; Rubiales, Anthony L.; Thompson, Heike; Wong, Selmer; Marlowe, Trey; Narcy, Mark
PATENT ASSIGNEE(S): Electron Vision Corporation, USA
SOURCE: U.S., 12 pp., Cont.-in-part of U.S. 6,132,814.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	----	-----	
US 6607991	B1	20030819	US 1999-474399	1999 1229
US 6132814	A	20001017	US 1997-856888	1997 0514
WO 2001048805	A1	20010705	WO 2000-US35639	2000

1229

W: CA, JP, KR

RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,

MC, NL, PT, SE, TR

JP 2003518767

T2

20030610

JP 2001-548425

2000

1229

PRIORITY APPLN. INFO.:

US 1995-437461

B1

1995

0508

US 1997-856888

A2

1997

0514

US 1999-474399

A

1999

1229

WO 2000-US35639

W

2000

1229

AB An electron beam exposure method is described which provides a means of curing spin-on-glass or spin-on-polymer dielec. material formed on a semiconductor wafer. The dielec. material insulates the conductive metal layer and planarizes the topog. in the process of manufacturing multilayered integrated circuits. The method utilizes a large area, uniform electron beam exposure system in a soft vacuum environment. A wafer coated with uncured dielec. material is irradiated with electrons of sufficient energy to penetrate the entire thickness of the dielec. material and is simultaneously heated by IR heaters. By adjusting the process conditions, such as electron beam total dose and energy, temperature of the wafer, and ambient atmospheric, the properties of the cured dielec. material can be modified.

IC ICM H01L021-469

INCL 438787000; 438473000; 438638000

CC 76-3 (Electric Phenomena)

IT Metals, uses

(layer; curing of spin-on dielec. films utilizing electron beam radiation in semiconductor device fabrication)

IT Integrated circuits

(multilayered; curing of spin-on dielec. films utilizing electron beam radiation in semiconductor device fabrication)

IT Fluoropolymers, properties

Polyimides, properties

Polymers, properties

(spin-on; curing of spin-on dielec. films utilizing electron beam radiation in semiconductor device fabrication)

IT 9002-84-0, PTFE 25722-33-2D, Parylene, derivs. 153315-81-2,

Hydrogensilsesquioxane 203945-07-7, SiLK (dielectric)

213329-13-6, Methanone, bis(4-fluorophenyl)-, polymer

with 1,1'-(1,2-ethynediyl)bis[4-fluorobenzene] and

4,4'-(9H-fluoren-9-ylidene)bis[phenol]

(spin-on; curing of spin-on dielec. films utilizing electron beam radiation in semiconductor device fabrication)

REFERENCE COUNT:

30

THERE ARE 30 CITED REFERENCES AVAILABLE

FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L36 ANSWER 14 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:408822 HCAPLUS
 DOCUMENT NUMBER: 138:377567
 TITLE: Method of forming etched via structures for
 integrated circuit devices
 INVENTOR(S): Lin, Hua-Tai; Linliu, Kung
 PATENT ASSIGNEE(S): Taiwan Semiconductor Manufacturing Company,
 Taiwan
 SOURCE: U.S., 10 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 6569760	B1	20030527	US 2001-785113	2001 0220
PRIORITY APPLN. INFO.:			US 2001-785113	2001 0220

AB The invention relates to a method of forming etched via structures for integrated circuit devices while preventing via poisoning. The method consists of the following steps. A semiconductor structure is provided. A low-k dielec. layer is formed upon the semiconductor structure. A via opening is formed within the low-k layer. An inert polymer liner layer is formed upon the low-k dielec. layer and within the via opening. A photoresist layer is formed upon the inert polymer liner layer, filling the inert polymer lined via opening. The inert polymer liner layer prevents adverse chemical reactions between the photoresist layer and portions of the low-k dielec. layer. The photoresist layer is patterned to expose the inert polymer-lined via opening and portions of the inert polymer-lined low-k dielec. layer adjacent to the via opening. The exposed inert polymer-lined via opening and portions of the inert polymer-lined low-k dielec. layer adjacent to the via opening and the portions of the inert polymer-liner layer upon the via opening and portions of the inert polymer-lined low-k dielec. layer adjacent to the via opening are etched to form a structure opening. The patterned photoresist layer is removed. The structure is cleaned and a planarized metal structure is formed within the structure opening.

IC ICM H01L021-28
 INCL 438633000; 438638000; 438701000; 438702000; 438780000; 438976000
 CC 76-14 (Electric Phenomena)
 Section cross-reference(s): 38, 74
 ST etched via structure integrated circuit device
 IT Electric contacts
 Interconnections, electric
 (dual damascene; method of forming etched via structures for integrated circuit devices)
 IT Resists

- (etching; method of forming etched via structures for integrated **circuit** devices)
- IT Fluoride glasses
Silicate glasses
(fluorosilicate, low-k dielec.; method of forming etched via structures for integrated **circuit** devices)
- IT Fluoropolymers, uses
Fluoropolymers, uses
(inert liner; method of forming etched via structures for integrated **circuit** devices)
- IT Dielectric films
(low-k; method of forming etched via structures for integrated **circuit** devices)
- IT Cleaning
Contact holes
Etching
Photolithography
Polishing
Semiconductor **materials**
(method of forming etched via structures for integrated **circuit** devices)
- IT **Metals**, uses
(method of forming etched via structures for integrated **circuit** devices)
- IT Fluoropolymers, uses
(**polymers**, inert liner; method of forming etched via structures for integrated **circuit** devices)
- IT 409-21-2, Silicon carbide (SiC), uses 12033-89-5, Silicon nitride, uses
(etch stop; method of forming etched via structures for integrated **circuit** devices)
- IT 75-10-5, Difluoromethane
(fluoropolymer precursor; method of forming etched via structures for integrated **circuit** devices)
- IT 9002-84-0, PTFE 9002-84-0D, PTFE, **polymers**
(inert liner; method of forming etched via structures for integrated **circuit** devices)
- IT 203945-07-7, SiLK (dielectric) 334490-97-0, Black Diamond
(low-k dielec.; method of forming etched via structures for integrated **circuit** devices)
- IT 9011-14-7, PMMA 87261-04-9, p-tert-Butoxycarbonyloxystyrene homopolymer 167863-25-4, p-tert-Butoxycarbonyloxystyrene-hydroxystyrene copolymer
(photoresist; method of forming etched via structures for integrated **circuit** devices)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L36 ANSWER 15 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:312698 HCAPLUS

DOCUMENT NUMBER: 138:312731

TITLE: Thin film transistor device to reduce short
circuiting between **metal**
layers

INVENTOR(S): Lu, I-Min; Chen, Jr-Hong

PATENT ASSIGNEE(S): Industrial Technology Research Institute,
Taiwan

SOURCE: U.S., 8 pp.
CODEN: USXXAM

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6552361	B1	20030422	US 2000-680935	2000 1010
US 2002102773	A1	20020801	US 2002-105296	2002 0326
PRIORITY APPLN. INFO.:			TW 2000-89109389	A 2000 0511
			US 2000-680935	A3 2000 1010

AB The invention relates in general to the structure and the manufacturing method of a thin film transistor (TFT), and more particularly to a structure and a manufacturing method of a thin film transistor device that reduces short-circuiting between different metal layers. A planarization layer of polymer is formed on the interlayer to reduce short-circuit. The planarization layer further reduces the capacitance of the crossover capacitor and the delay time of the LCD panel using the TFT is therefor minimized. A gate thereof can be designed under the data line to increase aperture ratio.

ICM H01L029-04

ICS H01L029-76; H01L031-036; H01L027-01

INCL 257059000; 257066000; 257072000; 257347000

CC 76-3 (Electric Phenomena)

ST semiconductor device fabrication thin film transistor short circuit redn

IT Coating materials

(passivating; thin film transistor device to reduce short circuiting between metal layers)

IT Capacitors

Dielectric films

Electric insulators

Glass substrates

Interconnections, electric

Semiconductor device fabrication

Short circuits

Thin film transistors

(thin film transistor device to reduce short circuiting between metal layers)

IT Polymers, uses

(thin film transistor device to reduce short circuiting between metal layers)

IT 7440-21-3, Silicon, uses 7631-86-9, Silica, uses 12033-89-5,

Silicon nitride, uses 50926-11-9, Indium tin oxide

(thin film transistor device to reduce short circuiting between metal layers)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE

IN THE RE FORMAT

L36 ANSWER 16 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:965067 HCAPLUS
 DOCUMENT NUMBER: 138:48323
 TITLE: Method for manufacturing semiconductor devices
 having copper interconnects imbedded in a
 low-k dielectric layer
 INVENTOR(S): Ting, Shao-yu; Liang, Jack; Liu, Kuo-ju
 PATENT ASSIGNEE(S): Winbond Electronics Corp., Taiwan
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002192937	A1	20021219	US 2002-42995	2002 0107
US 6638849	B2	20031028	US 2001-294875P	2001 0530

PRIORITY APPLN. INFO.: P

AB The invention relates to a dual damascene process for forming semiconductor devices containing a copper interconnect and a low-k dielec. layer on a **wafer**, where the low-k dielec. layer is not degraded by a subsequent plasma etching. The process includes the steps of (i) forming a silica glass layer on a **wafer** surface which contains an interlevel dielec. (IDL) layer; (ii) photolithog. patterning the silica glass layer according to the pattern intended for the copper interconnect; (iii) conformably depositing a spacer dielec. layer on the silica glass layer; (iv) anisotropically etching the spacer dielec. layer to form a sidewall spacer; (v) depositing a low-k dielec. **material** on the **wafer** to form a low-k dielec. layer covering the silica glass layer and the sidewall spacer, followed by **planarizing** the low-k dielec. layer by chemical-mech. polishing; (vi) photolithog. removing the silica glass layer to form a trench in the low-k dielec. layer; (vii) depositing a copper layer to fill the trench; and (viii) **planarizing** the copper layer.

IC ICM H01L021-4763
 ICS H01L021-44

INCL 438618000; 438687000

CC 76-3 (**E**lectric Phenomena)

IT Polyimides, uses
 Polymers, uses
 Silsesquioxanes
 (low-k dielec.; method for manufacturing semiconductor devices having copper interconnects imbedded in a low-k dielec. layer)

IT 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-50-8,
 Copper, uses 7440-57-5, Gold, uses
 (metalization; method for manufacturing semiconductor devices having copper interconnects imbedded in a low-k dielec. layer)

L36 ANSWER 17 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:570697 HCAPLUS
 DOCUMENT NUMBER: 137:133148
 TITLE: Reduction of surface roughness during
 chemical mechanical
 planarization (CMP) in
 electronic device fabrication
 INVENTOR(S): Kramer, Stephen J.; Meikle, Scott G.
 PATENT ASSIGNEE(S): Micron Technology, Inc., USA
 SOURCE: U.S., 14 pp., Cont.-in-part of U.S. Ser. No.
 252,022.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6426295	B1	20020730	US 2000-584468	2000 0531
US 6409936	B1	20020625	US 1999-252022	1999 0216
US 2002182868	A1	20021205	US 2002-209035	2002 0730
US 6630403	B2	20031007	US 1999-252022	A2 1999 0216
PRIORITY APPLN. INFO.:			US 2000-584468	A1 2000 0531

AB Improved methods, compns. and structures formed therefrom are provided that allow for reduction of roughness in layers (e.g., oxide layers) of a **planarized wafer**. In one such embodiment, improved methods, compns. and structures formed therefrom for reduction of roughness in layers (e.g., oxide layers) of a **planarized wafer** were used in conjunction with high modulus polyurethane **pads**. In one embodiment, improved methods, compns. and structures formed therefrom are provided that reduce rough interlayer dielec. (ILD) conditions for a **wafer** during **CMP** processing of such a **wafer**. Accordingly, this reduction of rough ILD reduces chatter scratches which are scratches that emanate from regions of a **wafer** that has undergone **CMP** processing. Advantageously, reduction in chatter scratching reduces cracking (i.e., wormholing) in layers of the **wafer** that were **planarized**. Therefore, reduction in cracking decreases access of cleaning chemistries to underlying structures of the **wafer** during subsequent chemical cleaning of the **planarized wafer**, thereby reducing damage to such underlying structures from these cleaning chemistries (e.g., reduction of metal voids in underlying metal

structures). Embodiments of a method for forming a microelectronic substrate include mixing a surfactant at least 100 ppm to slurries to form a polishing solution. The method also includes **chemical-mech. planarizing** of the semiconductor **wafer** using the polishing solution. Addnl., embodiments of a polishing solution for **chemical-mech. planarizing** a microelectronic substrate includes slurries and a surfactant at least 100 ppm to the slurries.

IC ICM H01L021-00

INCL 438692000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 66

IT Polishing

(chemical-mech.; reduction of surface roughness during **chemical mech. planarization (CMP)** in electronic device fabrication)

IT Surfactants

(nonionic; reduction of surface roughness during **chemical mech. planarization (CMP)** in electronic device fabrication)

IT Polymers, uses

Polyurethanes, uses

(polishing **pads**; reduction of surface roughness during **chemical mech. planarization (CMP)** in electronic device fabrication)

IT Crack (fracture)

Dielectric films

Slurries

Surface roughness

Surfactants

(reduction of surface roughness during **chemical mech. planarization (CMP)** in electronic device fabrication)

IT 7631-86-9, Silica, uses 9002-92-0, Polyoxyethylene lauryl ether 9004-95-9, Polyoxyethylene cetyl ether 9004-98-2, Polyoxyethylene oleyl ether 9005-00-9, Polyoxyethylene stearyl ether

(reduction of surface roughness during **chemical mech. planarization (CMP)** in electronic device fabrication)

REFERENCE COUNT:

16

THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 18 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:487795 HCAPLUS

DOCUMENT NUMBER: 137:71389

TITLE:

Metalization of semiconductor substrates with integrated multi-stage gap fill and the associated **planarization**

INVENTOR(S):

Hsu, Wei-Yung; Chen, Liang-Yuh; Morad, Ratson; Carl, Daniel A.; Somekh, Sasson

PATENT ASSIGNEE(S):

Applied Materials, Inc., USA

SOURCE:

PCT Int. Appl., 49 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002050336	A2	20020627	WO 2001-US46449	2001 1203
WO 2002050336	A3	20050106		
W: CN, JP, KR, SG				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
US 2004003894	A1	20040108	US 2000-739139	2000 1218
US 6896776	B2	20050524		
JP 2004537842	T2	20041216	JP 2002-551208	2001 1203
TW 557506	B	20031011	TW 2001-90130036	2001 1204
US 2004266085	A1	20041230	US 2004-792069	2004 0303
PRIORITY APPLN. INFO.:			US 2000-739139	A 2000 1218
			WO 2001-US46449	W 2001 1203

AB A method and apparatus are provided for depositing and planarizing a material layer on a substrate. In 1 embodiment, an apparatus is provided which includes a partial enclosure, a permeable disk, a diffuser plate and optionally an anode. A substrate carrier can be positioned above the partial enclosure and is adapted to move a substrate into and out of contact or close proximity with the permeable disk. The partial enclosure and the substrate carrier are rotatable to provide relative motion between a substrate and the permeable disk. In another aspect, a method is provided in which a substrate is positioned in a partial enclosure having an electrolyte therein at a 1st distance from a permeable disk. A current is optionally applied to the surface of the substrate and a 1st thickness is deposited on the substrate. Next, the substrate is positioned closer to the permeable disk and a 2nd thickness is deposited on the substrate. During the deposition, the partial enclosure and the substrate are rotated relative to 1 another.

IC ICM C23C018-00

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 56

ST semiconductor material metalization multistage gap fill planarization

IT Polishing

(apparatus; metalization of semiconductor substrates with integrated multistage gap fill and associated planarization)

IT Polishing

(chemical-mech.; metalization of semiconductor

- substrates with integrated multistage gap fill and associated **planarization**)
- IT Electrolytes
Semiconductor **materials**
(**metalization** of semiconductor substrates with integrated multistage gap fill and associated **planarization**)
- IT Vapor deposition process
(**metalization**; **metalization** of semiconductor substrates with integrated multistage gap fill and associated **planarization**)
- IT Fluoropolymers, uses
Polymers, uses
Polyurethanes, uses
(polishing apparatus component; **metalization** of semiconductor substrates with integrated multistage gap fill and associated **planarization**)
- IT Diffusion barrier
(removal of; **metalization** of semiconductor substrates with integrated multistage gap fill and associated **planarization**)
- IT 7440-50-8, Copper, processes
(**metalization** of semiconductor substrates with integrated multistage gap fill and associated **planarization**)
- IT 9002-88-4, Polyethylene
(polishing apparatus component; **metalization** of semiconductor substrates with integrated multistage gap fill and associated **planarization**)

L36 ANSWER 19 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:327898 HCAPLUS
 DOCUMENT NUMBER: 136:349219
 TITLE: Method for fabrication of damascene interconnects and related structures
 INVENTOR(S): Liu, Q. Z.; Camilletti, Lawrence E.
 PATENT ASSIGNEE(S): Conexant Systems, Inc., USA
 SOURCE: U.S., 9 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6380078	B1	20020430	US 2000-569890	2000 0511
PRIORITY APPLN. INFO.:			US 2000-569890	2000 0511

AB The present invention is in the field of integrated **circuit** fabrication and of damascene interconnects for integrated **circuits** using copper and low dielec. constant **materials**. A sacrificial layer is formed over a low-k dielec. Trenches are then etched inside the sacrificial layer and the low-k dielec. The trenches are then filled with **metal**

. During a 1st **CMP** process, excess **metal** over the sacrificial layer is removed. During a 2nd **CMP** process, the sacrificial layer over the low-k dielec. and any remaining excess **metal** are removed. By the end of the 2nd **CMP** process substantially all of the sacrificial layer and all of the excess **metal** are removed. In this manner, the trenches in the low-k dielec. are filled with **metal** where the **metal** surface is substantially flush with the surface of the low-k dielec.

IC ICM H01L021-4763

INCL 438638000

CC 76-3 (**E**lectric Phenomena)

IT 272115-24-9, Methanone, (4-fluorophenyl)[3-[(4-fluorophenyl)ethynyl]phenyl]-, **polymer** with 4,4'-(9H-fluoren-9-ylidene)bis[phenol]

(FLARE; method for fabrication of damascene interconnects and related structures)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 20 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:182160 HCAPLUS

DOCUMENT NUMBER: 136:239964

TITLE: Versatile copper-wiring layout design with low-k dielectric integration

INVENTOR(S): Cha, Randall Cher Liang; See, Alex; Lim, Yeow Kheng; Lee, Tae Jong; Chan, Lap

PATENT ASSIGNEE(S): Chartered Semiconductor Manufacturing Ltd., Singapore

SOURCE: U.S., 12 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 6355563	B1	20020312	US 2001-798652	2001 0305
SG 92826	A1	20021119	SG 2002-120	2002 0108
PRIORITY APPLN. INFO.:			US 2001-798652	A 2001 0305

AB A method to integrate low dielec. constant dielec. **materials** with Cu **metalization** is described. A **metal** line is provided overlying a semiconductor substrate and having a nitride capping layer thereover. A polysilicon layer is deposited over the nitride layer and patterned to form dummy vias. A dielec. liner layer is conformally deposited overlying the nitride layer and dummy vias. A dielec. layer having a low dielec. constant is spun-on overlying the liner layer and covering the dummy vias. The dielec. layer is polished down whereby the dummy vias are exposed. Thereafter, the dielec. layer is cured whereby a

cross-linked surface layer is formed. The dummy vias are removed thereby exposing a portion of the nitride layer within the via openings. The exposed nitride layer is removed. The via openings are filled with a Cu layer which is **planarized** to complete Cu **metalization** in the fabrication of an integrated circuit device.

IC ICM H01L021-44

INCL 438687000

CC 76-3 (**E**lectric Phenomena)

Section cross-reference(s): 75

IT Electrodeposition

(copper **metalization**; versatile copper-wiring layout design with low-k dielec. integration)

IT Coating process

(electroless, copper **metalization**; versatile copper-wiring layout design with low-k dielec. integration)

IT Coating process

(**metalization**, copper; versatile copper-wiring layout design with low-k dielec. integration)

IT Contact holes

Dielectric films

Integrated circuits

Interconnections, electric

Interconnections, electric

Linings (nonrefractory)

Polishing

Sputtering

(versatile copper-wiring layout design with low-k dielec. integration)

IT 272115-24-9, Methanone, (4-fluorophenyl)[3-[(4-fluorophenyl)ethynyl]phenyl]-, **polymer** with 4,4'-(9H-fluoren-9-ylidene)bis[phenol]

(FLARE; versatile copper-wiring layout design with low-k dielec. integration)

IT 7440-50-8, Copper, processes

(**metalization**; versatile copper-wiring layout design with low-k dielec. integration)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 21 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:158365 HCAPLUS

DOCUMENT NUMBER: 136:209164

TITLE: Method of forming over-molded chip scale package and resulting product

INVENTOR(S): Farnworth, Warren M.

PATENT ASSIGNEE(S): Micron Technology, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 13 pp., Cont. of U.S. Ser. No. 478,386.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2002025667	A1	20020228	US 2001-982748	

				2001 1018
US 6686268	B2	20040203		
US 5933713	A	19990803	US 1998-56124	
				1998 0406
US 6204095	B1	20010320	US 1999-304368	
				1999 0504
US 6355507	B1	20020312	US 2000-478386	
				2000 0106
PRIORITY APPLN. INFO.:			US 1998-56124	A
				1998 0406
			US 1999-304368	A3
				1999 0504
			US 2000-478386	A1
				2000 0106

AB The present invention relates to a method for packaging or encapsulating an IC die having conductive bumps or bonds that protrude beyond the IC covering or package. A method for forming a semiconductor device includes forming a conductive bump on ≥ 1 of bond pads of a semiconductor substrate of a semiconductor wafer. A top or uppermost portion of each conductive bump is then planarized. The exposed portions of an active surface of the semiconductor wafer are filled with a layer of encapsulation material. The conductive bumps are reformed to their pre-planarized shape and the semiconductor wafer is then diced to form singular semiconductor dies. A preferred method of the invention also includes placing each singular die in a mold to complete a 2nd encapsulation step in which a layer of encapsulation material is formed on the back surface or, alternatively, on the back and side surfaces of the semiconductor die to encapsulate the back, or the back and sides, of the semiconductor die.

IC ICM H01L021-44

ICS H01L021-48; H01L021-50

INCL 438612000

CC 76-3 (Electric Phenomena)

IT Electric contacts

(bond pads; method of forming over-molded chip scale package and resulting product)

IT Conducting polymers

Electric conductors, glass

(bump contact; method of forming over-molded chip scale package and resulting product)

IT Metals, uses

Resins

(bump contact; method of forming over-molded chip scale package and resulting product)

L36 ANSWER 22 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:131478 HCAPLUS

DOCUMENT NUMBER: 136:192712
 TITLE: Slurry for chemical mechanical polishing of
metals and use thereof
 INVENTOR(S): Canaperi, Donald F.; Cote, William J.; Feeney,
 Paul; Krishnan, Mahadevaiyer; Liu, Joyce C.;
 Lofaro, Michael F.; Murphy, Philip; White,
 Eric Jeffrey
 PATENT ASSIGNEE(S): International Business Machines Corporation,
 USA
 SOURCE: U.S., 7 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6348076	B1	20020219	US 1999-472961	1999 1228
PRIORITY APPLN. INFO.:			US 1999-158692P	P 1999 1008

AB The present invention relates to slurry compns. that are especially useful for polishing or **planarizing** a surface. The present invention is especially use for polishing or **planarizing** copper used as interconnect wiring in integrated **circuit** devices such as semiconductor **wafers** containing copper damascene and dual damascene features. The present invention also relates to polishing processes employing the compns. of the present invention. Slurry compns. comprising an oxidizing agent, Cu corrosion inhibitor, abrasive particles; surface active agent and polyelectrolyte are useful for polishing or **planarizing** chip interconnect/wiring **material** such as Al, W and especially Cu.

IC ICM C09G001-02
 ICS C09G001-04; B24B001-00
 INCL 051309000
 CC 76-3 (**E**lectric Phenomena)
 ST chem mech polishing slurry **metal** interconnection
 IT Sulfonic acids, processes
 (alkanesulfonic, salts, polishing slurry surfactant; slurry for chemical mech. polishing of **metals** and use thereof)
 IT Slurries
 (chemical-mech. polishing; slurry for chemical mech. polishing of **metals** and use thereof)
 IT Polishing
 (chemical-mech.; slurry for chemical mech. polishing of **metals** and use thereof)
 IT Refractory **metals**
 (device intermediate layer; slurry for chemical mech. polishing of **metals** and use thereof)
 IT Ethers, processes
 (nonyl, polishing slurry surfactant; slurry for chemical mech. polishing of **metals** and use thereof)
 IT Interconnections, electric
 (polishing of; slurry for chemical mech. polishing of

- metals** and use thereof)
- IT Quaternary ammonium compounds, processes
(polishing slurry surfactant; slurry for chemical mech. polishing
of **metals** and use thereof)
- IT Abrasives
Corrosion inhibitors
Oxidizing agents
Polymer electrolytes
Surfactants
(slurry for chemical mech. polishing of **metals** and use
thereof)
- IT Aluminum alloy, base
Copper alloy, base
Tungsten alloy, base
(interconnections, polishing of; slurry for chemical mech.
polishing of **metals** and use thereof)
- IT 7440-03-1, Niobium, processes 7440-25-7, Tantalum, processes
7440-32-6, Titanium, processes 12033-62-4, Tantalum nitride
(TaN) 12648-34-9, Niobium nitride 25583-20-4, Titanium nitride
(TiN)
(device intermediate layer; slurry for chemical mech. polishing of
metals and use thereof)
- IT 7429-90-5, Aluminum, processes 7440-33-7, Tungsten, processes
7440-50-8, Copper, processes
(interconnections, polishing of; slurry for chemical mech.
polishing of **metals** and use thereof)
- IT 1344-28-1, Alumina, processes
(polishing slurry abrasive; slurry for chemical mech. polishing of
metals and use thereof)
- IT 95-14-7, 1H-Benzotriazole 288-88-0, 1H-1,2,4-Triazole
(polishing slurry corrosion inhibitor; slurry for chemical mech.
polishing of **metals** and use thereof)
- IT 10421-48-4, Ferric nitrate
(polishing slurry oxidizing agent; slurry for chemical mech.
polishing of **metals** and use thereof)
- IT 9003-01-4, Polyacrylic acid 9003-05-8, Polyacrylamide
(polishing slurry polyelectrolyte; slurry for chemical mech.
polishing of **metals** and use thereof)
- IT 126-92-1, Sodium octyl sulfate 151-21-3, Sodium lauryl sulfate,
processes 1072-15-7, Sodium nonyl sulfate 2207-98-9, Sodium
hexylsulfate 18981-98-1, Sodium heptyl sulfate
(polishing slurry surfactant; slurry for chemical mech. polishing
of **metals** and use thereof)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L36 ANSWER 23 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:473037 HCAPLUS

DOCUMENT NUMBER: 135:54499

TITLE: In-situ **metalization** monitoring
using eddy current measurements and optical
measurements

INVENTOR(S): Lehman, Kurt R.; Lee, Shing M.; Johnson, Walt;
Fielden, John; Zhao, Guoheng; Nikoonahad,
Mehrddad

PATENT ASSIGNEE(S): Kla-Tencor Corporation, USA

SOURCE: PCT Int. Appl., 66 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001046684	A1	20010628	WO 2000-US35358	2000 1222
W: JP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
US 6433541	B1	20020813	US 2000-633198	2000 0807
US 6707540	B1	20040316	US 2000-633800	2000 0807
EP 1244907	A1	20021002	EP 2000-991438	2000 1222
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 6621264	B1	20030916	US 2002-166585	2002 0605
US 2004189290	A1	20040930	US 2003-623953	2003 0721
US 6885190	B2	20050426	US 1999-172080P	P 1999 1223
PRIORITY APPLN. INFO.:				
			US 2000-633198	A 2000 0807
			US 2000-633800	A 2000 0807
			WO 2000-US35358	W 2000 1222
			US 2002-166585	A3 2002 0605

AB Disclosed is a method of obtaining information in-situ regarding a film of a sample using an eddy probe during a process for removing the film. The eddy probe has ≥ 1 sensing coil. An a.c. voltage is applied to the sensing coil(s) of the eddy probe. One or more 1st signals are measured in the sensing coil(s) of the eddy probe when the sensing coil(s) are positioned proximate the film of the sample. One or more 2nd signals are measured in the sensing coil(s) of the eddy probe when the sensing coil(s) are positioned proximate to a reference material having a fixed

Adnll., a chemical mech. polishing (CMP) system for polishing a sample with a polishing agent and monitoring the sample is disclosed. The CMP system includes a polishing table, a sample carrier arranged to hold the sample over the polishing table, and an eddy probe.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

DOCUMENT TYPE: Patent

LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6121149	A	20000919	US 1999-296554	1999 0422
PRIORITY APPLN. INFO.:			US 1999-296554	1999 0422

AB The reliability of in-laid **metalization** patterns, e.g., of Cu or a Cu-based alloy is significantly enhanced by voidlessly filling recesses formed in the dielec. layer surface by an electroplating process. Embodiments of the present invention include preventing pinching-off of the recess opening due to formation of overhanging nucleation/seed layer deposits at the corners of the opening as a result of locally increased rates of deposition. Embodiments of the present invention also include providing a dual-layered dielec. layer comprising dielec. **materials** having different lateral etching rates when subjected to a preselected etching process, for selectively tapering the width of the recess mouth opening to provide a wider opening at the substrate surface, which tapered width profile effectively prevents formation of overhanging deposits, which overhanging deposits can result in occlusion and void formation during electroplating to fill the recesses.

IC ICM H01L021-00
 INCL 438692000
 CC 76-3 (**Electric** Phenomena)
 Section cross-reference(s): 56, 72
 ST electroplating **metal** via interconnect integrated **circuit** fabrication
 IT Polishing
 (chemical-mech.; in optimized trench/via profile for damascene filling in integrated-**circuit** fabrication)
 IT Vapor deposition process
 (chemical; in optimized trench/via profile for damascene filling in integrated-**circuit** fabrication)
 IT Sputtering
 Sputtering
 (etching; in optimized trench/via profile for damascene filling in integrated-**circuit** fabrication)
 IT Contact holes
 Dielectric films
 Diffusion barrier
 Doping
 Electrodeposition
 (in optimized trench/via profile for damascene filling in integrated-**circuit** fabrication)
 IT Borophosphosilicate glasses
 Borosilicate glasses
 Phosphosilicate glasses
Polymers, processes
 (in optimized trench/via profile for damascene filling in integrated-**circuit** fabrication)
 IT Integrated **circuits**

Semiconductor device fabrication
 (optimized trench/via profile for damascene filling in
 integrated-circuit fabrication)

IT Vapor deposition process
 (phys.; in optimized trench/via profile for damascene filling
 in integrated-circuit fabrication)

IT Etching
 (plasma; in optimized trench/via profile for damascene filling
 in integrated-circuit fabrication)

IT Refractory metals
 (seed layer; in optimized trench/via profile for damascene
 filling in integrated-circuit fabrication)

IT Etching
 (selective; in optimized trench/via profile for damascene
 filling in integrated-circuit fabrication)

IT Etching
 Etching
 (sputter; in optimized trench/via profile for damascene filling
 in integrated-circuit fabrication)

IT Aluminum alloy, base
 Chromium alloy, base
 Cobalt alloy, base
 Copper alloy, base
 Gold alloy, base
 Nickel alloy, base
 Silver alloy, base
 Tantalum alloy, base
 Titanium alloy, base
 Tungsten alloy, base
 (in optimized trench/via profile for damascene filling in
 integrated-circuit fabrication)

IT 1344-28-1, Alumina, uses
 (CMP slurry; in optimized trench/via profile for
 damascene filling in integrated-circuit fabrication)

IT 1303-00-0, Gallium arsenide, processes 7429-90-5, Aluminum,
 processes 7440-02-0, Nickel, processes 7440-21-3, Silicon,
 processes 7440-22-4, Silver, processes 7440-25-7, Tantalum,
 processes 7440-32-6, Titanium, processes 7440-33-7, Tungsten,
 processes 7440-47-3, Chromium, processes 7440-48-4, Cobalt,
 processes 7440-50-8, Copper, processes 7440-57-5, Gold,
 processes 7631-86-9, Silica, processes 12033-89-5, Silicon
 nitride, processes
 (in optimized trench/via profile for damascene filling in
 integrated-circuit fabrication)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L36 ANSWER 25 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:592949 HCAPLUS

DOCUMENT NUMBER: 133:171108

TITLE: Method for CMP of low dielectric
 constant polymer layers for integrated
 circuits

INVENTOR(S): Hosali, Sharath D.

PATENT ASSIGNEE(S): Rodel Holdings, Inc., USA

SOURCE: PCT Int. Appl., 18 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000049647	A1	20000824	WO 2000-US3893	2000 0216
W: CN, JP, KR, SG RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1171906	A1	20020116	EP 2000-913478	2000 0216
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002537652	T2	20021105	JP 2000-600297	2000 0216
PRIORITY APPLN. INFO.:				
			US 1999-120567P	P 1999 0218
			WO 2000-US3893	W 2000 0216

AB A method for chemical-mech. polishing of a low dielec. constant polymeric layer wherein a slurry comprising high purity fine metal oxide particles uniformly dispersed in a stable aqueous medium was used.

IC ICM H01L021-302

CC 76-3 (Electric Phenomena)

ST Section cross-reference(s): 38, 66

IT chem mech polishing polymer dielec film integrated circuit

IT Polysiloxanes, uses
(alkyl, surfactant; in method for CMP of low dielec. constant polymer layers for integrated circuits)

IT Surfactants
(amphoteric; in method for CMP of low dielec. constant polymer layers for integrated circuits)

IT Surfactants
(anionic; in method for CMP of low dielec. constant polymer layers for integrated circuits)

IT Polyethers, processes
(aromatic; method for CMP of low dielec. constant polymer layers for integrated circuits)

IT Polysiloxanes, uses
(aryl, surfactant; in method for CMP of low dielec. constant polymer layers for integrated circuits)

IT Surfactants
(cationic; in method for CMP of low dielec. constant polymer layers for integrated circuits)

IT Polishing
(chemical-mech.; method for CMP of low dielec. constant polymer layers for integrated circuits)

IT Polyoxyalkylenes, uses

(ethers, surfactant; in method for **CMP** of low dielec.
constant **polymer** layers for integrated **circuits**
)

IT Slurries
Surfactants
(in method for **CMP** of low dielec. constant
polymer layers for integrated **circuits**)

IT Aerogels
Dielectric films
Integrated **circuits**
Semiconductor device fabrication
(method for **CMP** of low dielec. constant **polymer**
layers for integrated **circuits**)

IT Fluoropolymers, processes
Polymers, processes
(method for **CMP** of low dielec. constant **polymer**
layers for integrated **circuits**)

IT Surfactants
(nonionic; in method for **CMP** of low dielec. constant
polymer layers for integrated **circuits**)

IT Salts, uses
(oxidizable; in method for **CMP** of low dielec. constant
polymer layers for integrated **circuits**)

IT Porous materials
(**polymers**; method for **CMP** of low dielec.
constant **polymer** layers for integrated **circuits**
)

IT Oxides (inorganic), uses
(slurry; in method for **CMP** of low dielec. constant
polymer layers for integrated **circuits**)

IT Interconnections (electric)
(vias; method for **CMP** of low dielec. constant
polymer layers for integrated **circuits** with)

IT Aluminum alloy, base
Copper alloy, base
Gold alloy, base
Iridium alloy, base
Palladium alloy, base
Platinum alloy, base
Tungsten alloy, base
(vias; method for **CMP** of low dielec. constant
polymer layers for integrated **circuits** with)

IT 1306-38-3, Ceria, uses 1314-23-4, Zirconia, uses 1344-28-1,
Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania,
uses
(in method for **CMP** of low dielec. constant
polymer layers for integrated **circuits**)

IT 9002-84-0, Polytetrafluoroethylene 25722-33-2, Parylene
(method for **CMP** of low dielec. constant **polymer**
layers for integrated **circuits**)

IT 7429-90-5, Aluminum, processes 7439-88-5, Iridium, processes
7440-05-3, Palladium, processes 7440-06-4, Platinum, processes
7440-33-7, Tungsten, processes 7440-50-8, Copper, processes
7440-57-5, Gold, processes
(vias; method for **CMP** of low dielec. constant
polymer layers for integrated **circuits** with)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L36 ANSWER 26 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:569907 HCAPLUS
 DOCUMENT NUMBER: 133:158698
 TITLE: Low-cost packaging scheme for several chips on
 a single **wafer**
 INVENTOR(S): Lin, Mou-shiung
 PATENT ASSIGNEE(S): Taiwan
 SOURCE: U.S., 12 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6103552	A	20000815	US 1998-131429	1998 0810
US 6350705	B1	20020226	US 2000-617012	2000 0714
US 6486563	B1	20021126	US 2000-619017	2000 0719
PRIORITY APPLN. INFO.:			US 1998-131429	A2 1998 0810

AB A process and a package for achieving **wafer** scale packaging is described. A layer of a polymeric **material**, such as polyimide, silicone elastomer, or benzocyclobutene is deposited on the surface of a chip. Via holes through this layer connect to the top surfaces of the studs that pass through the passivating layer of the chip. In one embodiment, the polymeric layer covers a redistribution network on a previously **planarized** surface of the chip. Individual chip-level networks are connected together in the kerf so that conductive posts may be formed inside the via holes through electroplating. After the formation of solder bumps, the **wafer** is diced into individual chips thereby isolating the individual redistribution networks. In a 2nd embodiment, no redistribution network is present so electroless plating was used to form the posts. In a 3rd embodiment, there is also no redistribution network but electroplating is made possible by using a contacting layer. Solder bumps attached to the posts are then formed by electroless plating, screen or stencil printing.

IC ICM H01L021-44
 INCL 438113000
 CC 76-3 (**E**lectric Phenomena)
 ST packaging chip **wafer** polymer plating
 IT Coating process
 (electroless; in low-cost packaging scheme for several chips on single **wafer**)
 IT Adhesive bonding
 Bump contacts
 Coating process
 Contact holes
 Electrodeposition

Etching
 Photolithography
 Photoresists
 Screen printing
 Soldering
 Solders
 (in low-cost packaging scheme for several chips on single wafer)

IT Polyimides, processes
 Polymers, processes
 Silicone rubber, processes
 (in low-cost packaging scheme for several chips on single wafer)

IT **Metals**, processes
 (in low-cost packaging scheme for several chips on single wafer)

IT Drilling
 (laser; in low-cost packaging scheme for several chips on single wafer)

IT Electronic packages
 Electronic packaging process
 Integrated **circuits**
 (low-cost packaging scheme for several chips on single wafer)

IT Coating process
 (spin; in low-cost packaging scheme for several chips on single wafer)

IT Coating process
 (spray; in low-cost packaging scheme for several chips on single wafer)

IT Printing (nonimpact)
 (stenciling; in low-cost packaging scheme for several chips on single wafer)

IT 139196-38-6, Polybenzocyclobutene
 (in low-cost packaging scheme for several chips on single wafer)

IT 7429-90-5P, Aluminum, processes 7440-50-8P, Copper, processes
 7440-57-5P, Gold, processes
 (in low-cost packaging scheme for several chips on single wafer)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L36 ANSWER 27 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:10209 HCAPLUS
 DOCUMENT NUMBER: 132:201698
 TITLE: SiLK dielectric **planarization** by
 chemical mechanical polishing
 AUTHOR(S): Kuchenmeister, F.; Schubert, U.; Wenzel, C.
 CORPORATE SOURCE: Semiconductor and Microsystems Technology
 Laboratory, Dresden University of Technology,
 Dresden, D-01062, Germany
 SOURCE: Microelectronic Engineering (2000), 50(1-4),
 47-52
 CODEN: MIENEF; ISSN: 0167-9317
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB As the feature size of integrated **circuits** is driven to

smaller dimensions the importance of the inter- and intralayer isolator capacitance in future **metalization** schemes becomes more pronounced. Organic polymers with low dielec. consts. are one class of **material** choice for the replacement of SiO₂. However, their successful integration into functional **circuits** requires new fabrication procedures. The embedded dielec. scheme offers an evolutionary path for their successful integration into a subtractive etched, aluminum-based integrated **circuit**. This scheme can effectively lower the total capacitance while minimally changing the rest of the **metalization** fabrication process. However, the non-conformal deposition of spin-on polymers requires an effective **planarization** process. Therefore, this paper focuses on the **planarization** capability of a chemical mech. polishing process (**CMP**) using SiLK resin as the interlayer dielec. **material**. The exptl. results demonstrate the high **planarization** capability of the **CMP** process using a com. available slurry. The post-**CMP** degree of **planarization** is greater than 95% for all feature dimensions and this **planarity** can be achieved rapidly. SiLK dielec. coatings are therefore considered as a promising candidate to replace SiO₂ in existing Al/W-based technologies.

CC 76-10 (**Electric Phenomena**)
 Section cross-reference(s): 25
 ST SiLK dielec **planarization chem** mech polishing
 IT Dielectric constant
 Electric capacitance
 Electric insulators
 Integrated **circuits**
 Slurries
 (SiLK dielec. **planarization by chemical mech.**
 polishing)
 IT Polishing
 (chemical-mech., aromatic hydrocarbon; SiLK dielec.
planarization by chemical mech. polishing)
 IT Electric insulators
 (coatings; SiLK dielec. **planarization by chem**
 . mech. polishing)
 IT **Polymers**, properties
 (dielec. constant; SiLK dielec. **planarization by**
chemical mech. polishing)
 IT Coating process
 (**metalization**; SiLK dielec. **planarization**
 by **chemical mech.** polishing)
 IT 203945-07-7, SiLK
 (dielec. **materials**; SiLK dielec.
planarization by chemical mech. polishing)
 IT 7631-86-9, Silica, properties
 (elec. insulator, replacement with organic **polymer**; SiLK
 dielec. **planarization by chemical mech.**
 polishing)
 REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L36 ANSWER 28 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1999:165428 HCAPLUS
 DOCUMENT NUMBER: 130:274457
 TITLE: P-4 process - a novel high-density, low-cost
 multilayer planar thin-film PWB technology

AUTHOR(S): Li, Weiping; Tummala, Rao
CORPORATE SOURCE: Packaging Research Center, Georgia Institute
of Technology, Atlanta, GA, 30332, USA
SOURCE: Proceedings - Electronic Components &
Technology Conference (1998); 48th, 151-157
CODEN: PETCES
PUBLISHER: Institute of Electrical and Electronics
Engineers
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review with 15 refs. The advantages of thin film on PWB wiring substrate (MCM-D/L) include sequential fabrication and blind/buried microvias to enable fine-line, high-d. wiring; and PWB-compatible **materials** and processes to ensure low cost. Currently, the majority of sequential build-up activities focuses on one or two layers thin film wiring for surface redistribution. The trends in IC technol., however, require high-d., multilayer thin film interconnection in the next few years. A novel plated-post, photo-polymer (P-4) technol. is described which offers a solution to multilayer thin-film buildup of planar structures on PWBs. Key to this P-4 process are the unique microvia formation and **metalization** processes. Copper posts are electroplated prior to photo-polymer dielec. layer coating. Microvias are formed right on top of the posts with a significantly reduced aspect ratio compared to conventional microvias. The conductor lines and via posts are fabricated by semi-additive copper plating to achieve fine feature size and minimize waste. As a result, excellent **planarity** was achieved, which enables the stacking of vias in consecutive layers. Key **material** and process issues relevant to the P-4 process are addressed. Variation and possible extension of this technol. are also explored.

CC 76-0 (**Electric** Phenomena)

ST review PWB writing multichip module **circuit** technol

IT **Polymers**, uses

(P-4 process, a novel high-d., low-cost multilayer planar thin-film PWB technol.)

IT Coating process

(**metalization**; P-4 process, a novel high-d., low-cost multilayer planar thin-film PWB technol.)

IT Integrated **circuits**

(multichip module; P-4 process, a novel high-d., low-cost multilayer planar thin-film PWB technol.)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L36 ANSWER 29 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:816086 HCAPLUS

DOCUMENT NUMBER: 130:59925

TITLE: Forming a via hole in an integrated
circuit structure

INVENTOR(S): Wang, Chin-Kun

PATENT ASSIGNEE(S): Taiwan

SOURCE: U.S., 10 pp.
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5849637	A	19981215	US 1996-662774	1996 0610

PRIORITY APPLN. INFO.:

US 1996-662774

1996
0610

AB A via hole for a **metal** contact is formed by depositing a **metal** layer on the surface of a semiconductor device structure; depositing a thick PECVD oxide on the **metal** layer; patterning the **metal** layer using photolithog. and etching so that what remains after this step is patterned **metal** regions such as lines or **pads**, each of which is covered by a thick PECVD oxide; creating islands of PECVD oxide using a photolithog. process on the patterned **metal** regions at locations where it is desired to form via holes, the remainder of the patterned **metal** regions being covered with a thin PECVD oxide underlayer; depositing a spin-on **planarization material**, such as SOG or low-K polymer, resulting in only a thin layer of spin-on **material** on top of the islands; using a partial etchback, removing the SOG from the top of the islands; depositing a PECVD oxide capping layer and polishing the capping layer using **CMP**; and then forming the via holes in the PECVD islands. The result is a via hole whose sidewalls are covered with a high-quality PECVD oxide. Thereafter, the via hole can be filled with a W plug without a problem of outgassing from the spin-on **material**.

IC ICM H01L021-306

INCL 438699000

CC 76-3 (**Electric** Phenomena)

ST via hole formation integrated **circuit** structure; PECVD oxide via hole formation integrated **circuit**; SOG via hole formation integrated **circuit**; **CMP** via hole formation integrated **circuit**; polymer low K via hole formation integrated **circuit**; tungsten plug via hole formation integrated **circuit**

IT Polishing
(chemical-mech.; in forming a via hole in integrated **circuit** structure)

IT Integrated **circuits**
Semiconductor device fabrication
(forming a via hole in integrated **circuit** structure)

IT Oxides (inorganic), processes
(forming a via hole in integrated **circuit** structure containing)

IT Electric contacts
(forming a via hole in integrated **circuit** structure for)

IT Etching
Photolithography
(in forming a via hole in integrated **circuit** structure)

IT **Polymers**, processes
(low-K; in forming a via hole in integrated **circuit** structure)

IT Vapor deposition process
(plasma; in forming a via hole in integrated circuit structure)

IT Glass, processes
(spin on; in forming a via hole in integrated circuit structure)

IT 7440-33-7, Tungsten, processes
(forming a via hole in integrated circuit structure for)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 30 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:654356 HCAPLUS

DOCUMENT NUMBER: 129:324716

TITLE: Chemical mechanical polishing of polymer films

AUTHOR(S): Towery, Dan; Fury, Michael A.

CORPORATE SOURCE: AlliedSignal Inc., Advanced Microelectronic Materials, Sunnyvale, CA, 94089, USA

SOURCE: Journal of Electronic Materials (1998), 27(10), 1088-1094

CODEN: JECMA5; ISSN: 0361-5235

PUBLISHER: Minerals, Metals & Materials Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Strategies to reduce capacitance effects associated with shrinking integrated circuit (IC) design rules include incorporating low resistivity **metals** and insulators with low dielec. values, or "low- κ " **materials**. Using such **materials** in current IC fabrication schemes necessitates the development of reliable chemical mech. polishing (**CMP**) processes and process consumables tailored for them. Results of **CMP** expts. performed on FLARE[®] 2.0 using a specialized zirconium oxide (ZrO₂) polishing slurry is presented here. FLARE[®] 2.0 is a poly(arylene) ether from Allied Signal, Inc. with a nominal dielec. constant of 2.8. In addition, an insight into possible removal mechanisms during the **CMP** of organic polymers is provided by examining the performance of numerous abrasive slurries. Although specific to a limited number of polymers, the authors suggest that the information presented in this paper is relevant to the **CMP** performance of many polymer dielec. **materials**.

CC 76-14 (**Electric Phenomena**)

Section cross-reference(s): 38, 57

ST mechanochem polishing polymer film capacitance IC; polyarylene ether **CMP** abrasive slurry

IT Polyethers, properties
(aromatic, FLARE; chemical mech. polishing of **polymer** films)

IT Abrasives
Dielectric constant
Electric insulators
Integrated **circuits**
(chemical mech. polishing of **polymer** films)

IT Polishing
(chemical-mech.; chemical mech. polishing of **polymer** films)

IT **Polymers**, properties
(films; chemical mech. polishing of **polymer** films)

IT 1314-23-4, Zirconia, properties

(abrasive slurry; chemical mech. polishing of **polymer** films)

IT 1306-38-3, Cerium oxide (CeO₂), properties 1344-28-1, Alumina, properties 7631-86-9, Silica, properties 7782-40-3, Diamond, properties 13463-67-7, Titanium oxide (TiO₂), properties 18282-10-5, Tin oxide (SnO₂)

(abrasive, slurry of; chemical mech. polishing of **polymer** films)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 31 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:627381 HCAPLUS

DOCUMENT NUMBER: 129:253579

TITLE: Producing printed **circuit** boards with through contacts

INVENTOR(S): Kersten, Peter; Kiefer, Jorg

PATENT ASSIGNEE(S): Photo Print Electronic G.m.b.H., Germany

SOURCE: Eur. Pat. Appl., 14 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	
EP 865231	A1	19980916	EP 1998-810202	1998 0310

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

PRIORITY APPLN. INFO.: EP 1997-104365 A 1997
0314

AB To avoid problems resulting from shrinkage of filler **material** during curing, in the preparation of **circuit** boards having ≥ 1 through contact in a hole in the base **material**, 2-layer foils are pressed onto both sides of the base **material**, comprising a 1st layer of Cu foil and a 2nd layer of a Cu film, an ABS polymer film, or a self-adhesive plastic layer, so that the Cu foils adhere well to the base **material**. The holes are produced, and the holes and the exposed surfaces of the layers are provided with Cu layers. The **metalized** holes are completely filled with an insulator or a conductor. The layers, together with the Cu layers, are completely removed. The remaining stubs of the insulator or conductor extending above the Cu foils are removed after curing and the surfaces of the Cu foils are **planarized** and conventionally patterned.

ICM H05K003-00

ICS H05K003-42; H05K003-40

CC 76-14 (**E**lectric Phenomena)

Section cross-reference(s): 38

ST printed **circuit** board through contact prodn; copper coating through hole **circuit** board; ABS polymer printed **circuit** board; self adhesive plastic printed

circuit board
 IT Electric conductors
 Electric insulators
 (in producing printed circuit boards with through contacts)
 IT Epoxy resins, processes
 (in producing printed circuit boards with through contacts)
 IT Electric contacts
 Printed circuit boards
 (producing printed circuit boards with through contacts)
 IT Adhesives
 (producing printed circuit boards with through contacts containing)
 IT 9003-56-9, ABS polymer
 (in producing printed circuit boards with through contacts)
 IT 7440-50-8, Copper, processes
 (producing printed circuit boards with through contacts containing)
 REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L36 ANSWER 32 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1997:621198 HCAPLUS
 DOCUMENT NUMBER: 127:324950
 TITLE: A comparison of three low dielectric constant organic polymers
 AUTHOR(S): Case, C. B.; Case, C. J.; Kornblit, A.; Mills, M. E.; Castillo, D.; Liu, R.
 CORPORATE SOURCE: Bell Laboratories - Lucent Technologies, Murray Hill, NJ, 07974, USA
 SOURCE: Materials Research Society Symposium Proceedings (1997), 443 (Low-Dielectric Constant Materials II), 177-182
 CODEN: MRSPDH; ISSN: 0272-9172
 PUBLISHER: Materials Research Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Three low dielec. constant organic polymers are being studied for possible use in a conventional, subtractive etch, multi-level metal process with PVD Al plugs. Material properties, phys. properties, planarization ability and etch chemistries are compared, as well as the possibility of using these materials in a low temperature PVD Al plug process.
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 36
 ST org polymer substrative etch multilayer metalization
 IT Dielectric constant
 Etching
 Integrated circuits
 (comparison of low dielec. constant organic polymers for substrative etch in multilevel metal process in circuits with PVD Al plugs)
 IT Polymers, properties
 (comparison of low dielec. constant organic polymers for substrative etch in multilevel metal process in circuits with PVD Al plugs)

IT Fluoropolymers, processes
(comparison of low dielec. constant organic **polymers** for
substrative etch in multilevel **metal** process in
circuits with PVD Al plugs)

IT Coating process
(**metalization**; comparison of low dielec. constant organic
polymers for substrative etch in multilevel
metal process in **circuits** with PVD Al plugs)

IT 115-25-3, Perfluorocyclobutane 124221-30-3 177073-07-3, Flare
1.0 177073-08-4
(comparison of low dielec. constant organic **polymers** for
substrative etch in multilevel **metal** process in
circuits with PVD Al plugs)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L36 ANSWER 33 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1984:447371 HCAPLUS
DOCUMENT NUMBER: 101:47371
TITLE: Narrow features in electrical devices
INVENTOR(S): Marsh, Anthony
PATENT ASSIGNEE(S): Plessey Co. PLC, UK
SOURCE: Brit. UK Pat. Appl., 3 pp.
CODEN: BAXXDU
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2127751	A1	19840418	GB 1983-26620	1983 1005
GB 2127751	B2	19860423	GB 1982-28615	A 1982 1006

PRIORITY APPLN. INFO.: GB 1982-28615 A

AB A method is described for producing a fine line feature in an
integrated **circuit** or similar small electronic device.
The narrow feature is produced by printing an oversized
metal mask version of the narrow feature on an
intermediate layer on top of the **material** in which the
narrow feature is required, and then overetching and thereby
undercutting the oversized version to produce the fine lines. For
example, fine lines may be produced in a SiO₂ layer by printing a
metal masking layer on a **planarizing** layer of
polymer, then overetching the polymer with an O plasma. A
sputtered coat of a 2nd masking **metal** then replicates
the body of the remaining polymer.

IC C08J007-10; H01L021-467
CC 76-3 (**Electric** Phenomena)
ST integrated **circuit** fine line prodn; silica narrow line
etching; etching narrow **circuit** feature
IT **Polymers**, uses and miscellaneous
(as interlayer for fine line feature formation in integrated
circuit manufacture)

- IT Sputtering
(etching, of **polymer** interlayer for fine line
formation in silica in integrated **circuit** manufacture)
- IT Sputtering
(etching, of **polymer** interlayer, in oxygen for
fine-line formation in silica for integrated **circuits**
)
- IT Electric **circuits**
(integrated, fine line feature formation for)
- IT Etching
(sputter, of **polymer** interlayer for fine line
formation in silica in integrated **circuit** manufacture)
- IT Etching
(sputter, of **polymer** interlayer, in oxygen for
fine-line formation in silica for integrated **circuits**
)
- IT 7782-44-7, uses and miscellaneous
(etching in plasma of, of **polymer** interlayer for fine
line formation in silicon dioxide in integrated **circuit**
manufacture)
- IT 7631-86-9, uses and miscellaneous
(fine line formation in, in integrated **circuit**
manufacture)